Access DB# 120895

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: JOHN MAPLES Examiner #: 62294 Date: 5-1-04
Art Unit: 1745 Phone Number ~~30~~ 2-1287 Serial Number: 10/082,149
Mail Box and Bldg/Room Location: REM- 6-C89 Results Format Preferred (circle): (PAPER) DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: FUEL CELL SYSTEM AND MICROORGANISM INHIBITING METHOD

Inventors (please provide full names): ITOH, YASUYUKI; TAKEKAWA, TOSHIHIRO

Earliest Priority Filing Date: 3/14/2001

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

(Sorry about any false hits on radiator — when "radia?" was typed, we were thinking more along the lines of UV radiation or irradiation, etc.)

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STAFF USE ONLY	Type of Search		Vendors and cost where applicable	
Searcher: ES	NA Sequence (#)		STN	$ 204.52
Searcher Phone #:	AA Sequence (#)		Dialog	$ 379.01
Searcher Location:	Structure (#)		Questel/Orbit	
Date Searcher Picked Up:	Bibliographic	✓	Dr.Link	
Date Completed: 5-4-04	Litigation		Lexis/Nexis	
Searcher Prep & Review Time: 5	Fulltext		Sequence Systems	
Clerical Prep Time:	Patent Family		WWW/Internet	
Online Time: 130	Other		Other (specify)	

PTO-1590 (8-01)

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Requester's Full Name: JOHN MAPLES Examiner #: 62294 Date: 5-1-04
Art Unit: 1745 Phone Number ~~30~~ 2-1287 Serial Number: 10/082,149
Mail Box and Bldg/Room Location: Rem-6-C89 Results Format Preferred (circle): (PAPER) DISK E-MAIL

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****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: FUEL CELL SYSTEM AND MICROORGANISM INHIBITING METHOD

Inventors (please provide full names): ITOU, YASUYUKI; TAKEKAWA, TOSHIHIRO

Earliest Priority Filing Date: 3/14/2001

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

A fuel cell system comprising:

a fuel cell;

a fuel gas supply line supplying fuel gas to the fuel cell;

an oxidizing gas supply line supplying oxidizing gas to the fuel cell;

a circulation line circulating fluid through at least one of the fuel cell, the fuel gas supply line and the oxidizing gas supply line; and

a microorganism inhibiting unit located in the circulation line to execute sterilization so as to sterilize microorganisms present in the fluid.

A method of inhibiting microorganisms in a fuel cell system, the method comprising:

preparing a fuel cell;

preparing a gas supply line supplying fuel gas and oxidizing gas to the fuel cell;

circulating fluid through at least one of the fuel cell and the gas supply line; and

sterilizing the microorganisms present in the fluid in a midway through which the fluid is circulated.

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STAFF USE ONLY

Searcher: _____
Searcher Phone #: _____
Searcher Location: _____

Type of Search

NA Sequence (#)_____
AA Sequence (#)_____
Structure (#) _____

Vendors and cost where applicable

STN _____
Dialog _____
Questel/Orbit _____

Dialog search


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? show files
File   6:NTIS 1964-2004/May W1
         (c) 2004 NTIS, Intl Cpyrght All Rights Res
File   2:INSPEC 1969-2004/Apr W4
         (c) 2004 Institution of Electrical Engineers
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         (c) 2004 American Institute of Physics
File  65:Inside Conferences 1993-2004/May W1
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File  81:MIRA - Motor Industry Research 2001-2004/Mar
          (c) 2004 MIRA Ltd.
File  94:JICST-EPlus 1985-2004/Apr W2
         (c)2004 Japan Science and Tech Corp(JST)
File 103:Energy SciTec 1974-2004/Apr B2
         (c) 2004 Contains copyrighted material
File 241:Elec. Power DB 1972-1999Jan
         (c) 1999 Electric Power Research Inst.Inc
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         (c) 2004 DECHEMA
File 347:JAPIO Nov 1976-2003/Dec(Updated 040402)
         (c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200427
         (c) 2004  Thomson Derwent

? ds


Set     Items   Description
S1     110881   FUELCELL? OR FUEL?(2N)(CELL OR CELLS)
S2       3152   (STERILI? OR DECONTAMINA? OR SANIT? OR DISINFECT? OR ANTIS-
             EP? OR ASEPT?)(2N)(CIRCULAT? OR FLOW OR FLOWS OR FLOWED OR FL-
             OWING? ? OR STREAM? OR COOLANT?)
S3      33831   (RADIA? OR IRRAD? OR BOMBARD? OR UV OR UVA OR UVB OR SUV OR
              LUV OR ULTRAVIOLET? OR ULTRA(N)VIOLET?)(2N)(CIRCULAT? OR FLOW
              OR FLOWS OR FLOWED OR FLOWING? ? OR STREAM? OR COOLANT?)
S4      30599   (CLEANS? OR PURIF? OR FILTER? OR FILTRATION? OR MICROFILT?
             OR ULTRAFILT?)(2N)(CIRCULAT? OR FLOW OR FLOWS OR FLOWED OR FL-
             OWING? ? OR STREAM? OR COOLANT?)
S5       7618   (STERILI? OR DECONTAMINA? OR SANIT? OR DISINFECT? OR ANTIS-
             EP? OR ASEPT?)(2N)(MICROORGANISM? OR MICRORGANISM? OR BACTERI?
              OR BACIL? OR MICROBE? ? OR MICROBIAL? OR FUNG?)
S6       4279   (RADIA? OR IRRAD? OR BOMBARD? OR UV OR UVA OR UVB OR SUV OR
              LUV OR ULTRAVIOLET? OR ULTRA(N)VIOLET? OR PHOTOLY?)(2N)(MICR-
             OORGANISM? OR MICRORGANISM? OR BACTERI? OR BACIL? OR MICROBE?
             ? OR MICROBIAL? OR FUNG?)
S7       8238   (CLEANS? OR PURIF? OR FILTER? OR FILTRATION? OR MICROFILT?
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            OR ULTRAFILT?)(2N)(MICROORGANISM? OR MICRORGANISM? OR BACTERI?
             OR BACIL? OR MICROBE? ? OR MICROBIAL? OR FUNG?)
S8        152   PHOTOLY?(2N)(CIRCULAT? OR FLOW OR FLOWS OR FLOWED OR FLOWI-
            NG? ? OR STREAM? OR COOLANT?)
S9          6   S1 AND S2
S10        90   S1 AND S3
S11        62   S1 AND S4
S12         6   S1 AND S5
S13         0   S1 AND S6
S14        11   S1 AND S7
S15         0   S1 AND S8
S16    186694   COOLANT?
S17        35   (S10 OR S11) AND S16
S18         0   S10 AND S11
S19        22   S9 OR S12 OR S14
S20        35   S17 NOT S19
S21        49   S11 NOT (S19 OR S20)
S22        68   S10 NOT (S19 OR S20 OR S21)

? t s19/7,de/all

 19/7,DE/1     (Item 1 from file: 6)
DIALOG(R)File   6:NTIS
(c) 2004 NTIS, Intl Cpyrght All Rights Res. All rts. reserv.

1962131  NTIS Accession Number: DE96745609
  Konetsu kosansei suiso saikin kara seiseishita hidorogenase no denkyoku
shokubai to shite no tekisei. (Characterization of the hydrogenase from
thermoacidophilic aerobic hydrogen-oxidizing bacterium, hydrogenobacter
acidophilus)
  Sasaki, K. ; Nakasono, S.
  Central Research Inst. of Electric Power Industry, Tokyo (Japan).
  Corp. Source Codes: 005875000; 1566500
  Report No.: CRIE-U-94055
  Mar 95   17p
  Languages: Japanese
  Journal Announcement: GRAI9619; ERA9633
  Japanese.
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email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road,
Springfield, VA, 22161, USA.
  NTIS Prices: PC A03/MF A01
  Country of Publication: Japan
  Hydrogenate is an enzyme of bacteria, which catalyzes oxidation and
reduction of molecular hydrogen. The enzyme has been expected as an
alternative catalyst for expensive platinum. However, hydrogenase is very
sensitive to oxygen and high temperature, so that application studies on
```

them have not been advanced. A thermoacidophilic hydrogen-oxidizing bacterium, Hydrogenobacter acidophilus, had been isolated in our laboratory. It was suggested that the hydrogenate of the bacterium was thermos table and oxygen-stable in crude extract at least. The purpose of this study was purification and characterization of membrane-bound hydrogenate of the bacterium. Also, an application of the purified enzyme as a catalyst of *fuel* *cells* was investigated. H.acidophilus had two types of hydrogenase. One was membrane-bound type. The another was soluble type. The membrane-bound hydrogenase was more stable against oxygen than the soluble one. The membrane-bound hydrogenase was also more stable than membrane-bound hydrogenase of Alcaligenus eutrophus which was regarded as the most stable one among *bacterial* hydrogenated. The *purification* method of hydrogenase was developed. The recovery of hydrogenase on the purification steps was improved and the yield was 25-fold over that by our conventional method. The characterization of the purified enzyme was investigated. Molecular weight and active center of this enzyme was same to Class I of (Nife) hydrogenase. The purified enzyme catalyzed the reduction of molecular hydrogen on a carbon electrode with methylane blue as an electron mediator. While the hydrogen generation was not catalyzed by the enzyme. The purified enzyme showed high activity at high temperatures (>50(degree)C) but this activity reduced to 60% for half an hour at 60(degree)C. These results suggest the enzyme will be used for an electrode catalyst for *fuel* *cells* with further investigation for stabilization to high temperatures. 13 refs., 8 figs., 2 tabs.

Descriptors: *Bacteria; *Electrodes; *Hydrogenases; Absorption; Bound State; Catalysts; Deactivation; Dissolution; Electrochemistry; Enzyme Activity; Enzymes; Hourly Variations; Hydrogen; Hydrogen Production; Membranes; Molecular Weight; Oxidation

19/7,DE/2 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03077197
E.I. Monthly No: EIM9106-025155
Title: Application of the pentaiodide strong base resin disinfectant to the U.S space program.
Author: Marchin, George L.
Corporate Source: Kansas State Univ, Manhattan, KS, USA
Conference Title: Twentieth Intersociety Conference on Environmental Systems
Conference Location: Williamsburg, VA, USA Conference Date: 19900709
E.I. Conference No.: 13570
Source: SAE Technical Paper Series. Publ by SAE, Warrendale, PA, USA, SAE 901380. 5p
Publication Year: 1990
CODEN: STPSDN ISSN: 0148-7191

Language: English
Document Type: PA; (Conference Paper) Treatment: A; (Applications)
Journal Announcement: 9106
Abstract: A formulation of triiodide quaternary ammonium strong base resin has been employed on the Space Shuttle in a device known as the microbial check valve (MCV) to impart an iodine residual to water collected from *fuel* *cells* in order to prevent subsequent microbial contamination. The next higher homologue in the iodinated resin series is the pentaiodide resin. In practice when all of the quaternary ammonium sites have been loaded with triiodide ions additional diatomic iodine molecules can be added to give pentaiodide resins from 0 to 100% saturation. These resins differ in their aqueous iodine residual as well as biocidal capability. A typical formulation in which 97% of the quaternary ammonium sites are loaded with triiodide and 70% of those are additionally loaded with 1//2 has been compared with a typical triiodied with respect to biocidal capability. This pentaiodide resin has the capacity to devitalize 1 multiplied by 10**9 bacteria per ml in aqueous suspension within 10 sec of contact with the resin bed. Organisms that have been tested include Legionella pneumophila, Escherichia coli, and Staphylococcus aureus. Similar reductions in plaque forming units have been noted with MS 2 and f2 bacteriophage. The resin is also active against cysts of the intestinal parasite Giardia lamblia after a holding period of three minutes at 37 degree C. The iodine residual of the 97%/70% pentaiodide resin is 2.0 mg per liter. This residual can be substantially reduced by use of granulated activated carbon or additional ionic exchange resins downstream from the pentaiodide resin. In summary, the pentaiodide resin with 70% of its weight composed of elemental iodine, has a relatively low iodine residual, and may offer superior disinfection capability for applications on long duration space vehicles. (Author abstract) 16 Refs.
Descriptors: SPACECRAFT--*Water Supply; WATER TREATMENT--*Disinfection*; *MICROORGANISMS*--Control; WATER BACTERIOLOGY--Control; PERSONNEL--Health Care

19/7,DE/3 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03077179
E.I. Monthly No: EIM9106-025137
Title: Recent experiences with lodine water disinfection in shuttle.
Author: Gibbons, Randall E.; Flanagan, David T.; Schultz, John R.; Sauer, Richard L.; Slezak, Terry N.
Corporate Source: Krug Intl, Houston, TX, USA
Conference Title: Twentieth Intersociety Conference on Environmental Systems
Conference Location: Williamsburg, VA, USA Conference Date: 19900709
E.I. Conference No.: 13570

Source: SAE Technical Paper Series. Publ by SAE, Warrendale, PA, USA, SAE 901356. 11p
Publication Year: 1990
CODEN: STPSDN ISSN: 0148-7191
Language: English
Document Type: PA; (Conference Paper) Treatment: X; (Experimental)
Journal Announcement: 9106
Abstract: Microbial proliferation in the STS potable water system is prevented by maintaining a 2.5 ppm iodine residual. The iodine is added to *fuel* *cell* water by an iodinated ion exchange resin in the Microbial Check Valve (MCV). Crew comments indicated excessive iodine in the potable water. To better define the problem, a method of in-flight iodine analysis was developed. Inflight analysis during STS-30 and STS-28 indicated iodine residuals were generally in the 9-13 ppm range. It was determined that the high iodine residual was caused by MCV influent temperatures in excess of 120 degree F. This is well above the MCV operating range of 65-90 degree F. The solution to this problem was to develop a resin suitable for the higher temperatures. Since 8 months were required to formulate a MCV resin suitable for the higher temperatures, a temporary solution was necessary. Two additional MCV's were installed on the chilled and ambient water lines leading into the galley to remove the excess iodine. These reduced the iodine residual to 3-4 ppm during STS-33, STS-34, STS-36 and STS-32. A high-temperature resin was formulated and was initially flown on STS-31. (Author abstract) 10 Refs.
Descriptors: *SPACE SHUTTLES--*Water Supply; MICROORGANISMS--Control; WATER TREATMENT--Disinfection; IODINE--Effects

19/7,DE/4 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

00628893
E.I. Monthly No: EI7706038015
E.I. Yearly No: EI77011230
Title: ENZYMATIC HYDROLYSIS OF CELLULOSIC WASTES TO GLUCOSE.
Author: Spano, L. A.; Medeiros, J.; Mandels, M.
Corporate Source: US Army Natick Dev Cent, Mass
Source: Conf on Capturing the Sun Through Bioconvers, Proc, Washington, DC, Mar 10-12 1976 Publ by Washington Cent for Metrop Stud, Washington, DC, 1976 p 541-566
Publication Year: 1976
Language: ENGLISH
Journal Announcement: 7706
Abstract: The paper reports on an enzymatic process, which is based on the use of cullulase derived from mutant strains of the fungus Trichoderma viride. The first step is the production of the enzyme. This is accomplished by growing the fungus Trichoderma viride in a culture medium

containing shredded cellulose and various nutrient salts. Following its growth, the *fungus* culture is *filtered* and the solids discarded. The clear straw colored filtrate is the enzyme solution that is used in the saccharification reactor. Prior to its introduction into the reactor, the enzyme broth is assayed for cellulase and its acidity adjusted to a pH of 4. 8. Milled cellulose is then introduced into the enzyme solution and allowed to react with the cellulase to produce glucose sugar. The unreacted cellulose and enzyme is recycled back into the reactor, and the crude glucose syrup is filtered for use in chemical, or microbial fermentation processes to produce chemical feedstocks, single *cell* proteins, *fuels*, solvents, etc. 18 refs.

Descriptors: *CELLULOSE--*Wastes; CHEMICAL REACTIONS--Hydrolysis; SUGAR

19/7,DE/5 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

02676670 JICST ACCESSION NUMBER: 96A0132275 FILE SEGMENT: JICST-E
Characterization of the hydrogenase from thermoacidophilic aerobic hydrogen-oxidizing bacterium, Hydrogenobacter acidophilus.
SASAKI KAZUHIRO (1); NAKASONO SATOSHI (1)
(1) Cent. Res. Inst. of Electr. Power Ind., Abiko Res. Lab.
Denryoku Chuo Kenkyujo Abiko Kenkyujo Hokoku, 1995, NO.U94055, PAGE.20P, FIG.10, TBL.2, REF.13
JOURNAL NUMBER: F0804CAZ
UNIVERSAL DECIMAL CLASSIFICATION: 544.653 621.352.6
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Technical Report
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: Hydrogenase is an enzyme of bacteria, which catalyzes oxidation and reduction of molecular hydrogen. The enzyme has been expected as an alternative catalyst for expensive platinum. However, hydrogenase is very sensitive to oxygen and high temperature, so that application studies on them have not been advanced. A thermoacidophilic hydrogen-oxidizing bacterium, Hydrogenobacter acidophilus, had been isolated in our laboratory. It was suggested that the hydrogenase of the bacterium was thermostable and oxygen-stable in crude extract at least. The purpose of this study was purification and characterization of membrane-bound hydogenase of the bacterium. Also, an application of the purified enzyme as a catalyst of *fuel* *cells* was investigated. H.acidophilus had two types of hydrogenase. One was membrane-bound type. The another was soluble type. The membrane-bound hydrogenase was more stable against oxygen than the soluble one. The membrane-bound hydrogenase was also more stable than membrane-bound hydrogenase of Alcaligenus eutrophus which was regarded as the most stable one among *bacterial* hydrogenases. The *purification* method of hydrogenase was

developed. The recovery of hydrogenase on the purification steps was improved and the yield was 25-fold over that by our conventional method. The characterization of the purified enzyme was investigated. Molecular weight and active center of this enzyme was same to Class I of Nife!hydrogenase. The purified enzyme catalyzed the reduction of molecular hydrogen on a carbon electrode with metylane blue as an electron mediator. While the hydrogen generation was not catalyzed by the enzyme. The purified enzyme showed high activity at high temperatures(>50.DEG.C.) but this activity reduced to 60% for half an hour at 60.DEG.C.. These results suggest the enzyme will be used for an electrode catalyst for *fuel* *cells* with further investigation for stabilization to high temperatures. (author abst.)

DESCRIPTORS: electrode catalyst; hydrogenase; bacterium; thermophilic; acidophilic; hydrogen electrode; *fuel* *cell*; catalytic activity; catalyst deactivation(activity); hydrogen; chemical reaction; cathodic reduction; hydrogen evolution reaction

BROADER DESCRIPTORS: catalyst; oxidoreductase; enzyme; microorganism; property; reference electrode; electrode; chemical cell; battery; activity; element; reduction(reaction); electrochemical reaction

19/7,DE/6 (Item 1 from file: 103)
DIALOG(R)File 103:Energy SciTec

04208680 NEDO-97-960267; EDB-97-117384
Title: Water-cooled *fuel* *cell* power generation facility
Original Title: Suireishiki nenryo denchi hatsuden sochi
Author(s)/Editor(s): Ikeda, M. (Kanagawa (Japan)); Iwasa, N. (Osaka (Japan)); Ichihashi, T. (Nagoya (Japan)); Murakami, T. (Fuji Electric Co. Ltd., Kawasaki, Kanagawa (Japan))
Patent No.: JP 9-63612
Patent Assignee(s): Tokyo Gas Co. Ltd., Tokyo (Japan);Osaka Gas Co. Ltd., Osaka (Japan);Toho Gas Co. Ltd., Nagoya (Japan);Fuji Electric Co. Ltd., Kawasaki (Japan)
Patent Date Filed: 18 Aug 1995
Publication Date: 7 Mar 1997
(6 p)
Language: Japanese
Availability: Available from Japan Patent Information Organization of International Patent Documentation Center
Abstract: This invention aims to provide a water-cooled *fuel* *cell* power generation facility which prevents propagation of microbes without requiring complex maintenance operation such as chemical cleaning of the water recovery system and the water treatment system. The *fuel* *cell* power generation facility of this invention composed of stacking of multiple unit cells and cooling plates is installed with a cooling water circulation system to circulate cooling water in the cooling pipe

of the cooling plate, with a cooling water resupply apparatus composed of a generated water recovery system to condense and recover steam in the exhaust gas of the fuel reformer and to store it as mixed water with addition of tap water and a water treatment system to convert the mixed water into pure water to feed into the cooling water circulation system, and with an ultraviolet *sterilizer* to *sterilize* *microbes* in the mixed water. This ultraviolet sterilizer and an antibacterial filter may be equipped at different locations in the cooling water resupply apparatus. 2 figs.
Major Descriptors: *FUEL* *CELL* POWER PLANTS -- COOLING SYSTEMS; **FUEL* *CELL* POWER PLANTS -- DUCTS; **FUEL* *CELL* POWER PLANTS -- WATER; *MICROORGANISMS -- EQUIPMENT; **MICROORGANISMS* -- *STERILIZATION*; *ULTRAVIOLET RADIATION -- USES
Descriptors: MIXTURES
Broader Terms: DISPERSIONS; ELECTROMAGNETIC RADIATION; ENERGY SYSTEMS; HYDROGEN COMPOUNDS; OXYGEN COMPOUNDS; POWER PLANTS; RADIATIONS

19/7,DE/7 (Item 2 from file: 103)
DIALOG(R)File 103:Energy SciTec

04009099 NEDO-96-960123; EDB-96-092859
Title: *Fuel* *cell*
Original Title: Nenryo denchi
Author(s)/Editor(s): Kamiya, N.; Hirai, K.
Patent No.: JP 8-22833
Patent Assignee(s): Osaka Gas Co. Ltd. (Japan)
Patent Date Filed: 5 Jul 1994
Publication Date: 23 Jan 1996
(5 p)
Language: Japanese
Availability: Available from Japan Patent Information Organization of International Patent Documentation Center
Abstract: With the *fuel* *cell* which employs phosphoric acid as electrolyte, recovered water from the *fuel* *cell* body generally contains phosphoric acid ions which become the source of nutrition for microbes, and the water temperature of the water treatment system is beneficial to microbe breeding. By the propagation of *microbes*, the *filtering* elements, ion exchange resin, or reverse osmosis membrane tend to be clogged by the breeding of microbes. This invention relates to the use of copper, zinc, lead or alloys containing those metals in water passages of the water treatment system of the *fuel* *cell* so that cations of those metals may dissolve in water. The cations of those metals restrict propagation of microbes to prevent clogging caused by adhesion of *microbes* to *filters* and ion exchange resin. In concrete, the pipes for the water treatment system are structured with copper, zinc, lead, or alloys containing those metals, or metal

pieces of those materials are immersed in the water passages in the water tank or the treatment tank, otherwise, metallic nets made of the above-mentioned metals can be used in the filtering system. 2 figs.
Major Descriptors: ACID ELECTROLYTE *FUEL* *CELLS* -- WASTE MANAGEMENT; *ACID ELECTROLYTE *FUEL* *CELLS* -- WATER; *WATER -- WATER TREATMENT
Descriptors: CHEMICAL REACTORS; CONTROL; EQUIPMENT; FILTRATION; MATERIALS; MICROORGANISMS; TANKS; WATER TREATMENT PLANTS
Broader Terms: CONTAINERS; DIRECT ENERGY CONVERTERS; ELECTROCHEMICAL CELLS; *FUEL* *CELLS*; HYDROGEN COMPOUNDS; MANAGEMENT; OXYGEN COMPOUNDS; SEPARATION PROCESSES

19/7,DE/8 (Item 3 from file: 103)
DIALOG(R)File 103:Energy SciTec

03988468 NEDO-95-950454; EDB-96-072228
Title: Characterization of the hydrogenase from thermoacidophilic aerobic hydrogen-oxidizing bacterium, hydrogenobacter acidophilus
Original Title: Konetsu kosansei suiso saikin kara seiseishita hidorogenase no denkyoku shokubai to shite no tekisei
Author(s)/Editor(s): Sasaki, K.; Nakasono, S. (Central Research Institute of Electric Power Industry, Tokyo (Japan))
Corporate Source: Central Research Inst. of Electric Power Industry, Tokyo (Japan)
Publication Date: Mar 1995
(17 p)
Report Number(s): CRIE-U-94055
Order Number: DE96745609
Language: Japanese
Availability: OSTI; NTIS; Available from Central Research Institute of Electric Power Industry, 1-6-1, Otemachi, Chiyoda-ku, Tokyo, Japan
Abstract: Hydrogenate is an enzyme of bacteria, which catalyzes oxidation and reduction of molecular hydrogen. The enzyme has been expected as an alternative catalyst for expensive platinum. However, hydrogenase is very sensitive to oxygen and high temperature, so that application studies on them have not been advanced. A thermoacidophilic hydrogen-oxidizing bacterium, Hydrogenobacter acidophilus, had been isolated in our laboratory. It was suggested that the hydrogenate of the bacterium was thermos table and oxygen-stable in crude extract at least. The purpose of this study was purification and characterization of membrane-bound hydrogenate of the bacterium. Also, an application of the purified enzyme as a catalyst of *fuel* *cells* was investigated. H.acidophilus had two types of hydrogenase. One was membrane-bound type. The another was soluble type. The membrane-bound hydrogenase was more stable against oxygen than the soluble one. The membrane-bound hydrogenase was also more stable than membrane-bound hydrogenase of Alcaligenus eutrophus which was regarded as the most stable one among

bacterial hydrogenated. The *purification* method of hydrogenase was developed. The recovery of hydrogenase on the purification steps was improved and the yield was 25-fold over that by our conventional method. The characterization of the purified enzyme was investigated. Molecular weight and active center of this enzyme was same to Class I of [Nife] hydrogenase. The purified enzyme catalyzed the reduction of molecular hydrogen on a carbon electrode with methylane blue as an electron mediator. While the hydrogen generation was not catalyzed by the enzyme. The purified enzyme showed high activity at high temperatures (>50[degree]C) but this activity reduced to 60% for half an hour at 60[degree]C. These results suggest the enzyme will be used for an electrode catalyst for *fuel* *cells* with further investigation for stabilization to high temperatures. 13 refs., 8 figs., 2 tabs.

Major Descriptors: *BACTERIA -- HYDROGEN; *BACTERIA -- HYDROGENASES; *BACTERIA -- OXIDATION; *ELECTRODES -- CATALYSTS; *HYDROGENASES -- ELECTRODES

Descriptors: ABSORPTION; BOUND STATE; DEACTIVATION; DISSOLUTION; ELECTROCHEMISTRY; ENZYME ACTIVITY; ENZYMES; HOURLY VARIATIONS; HYDROGEN PRODUCTION; MEMBRANES; MOLECULAR WEIGHT

Broader Terms: CHEMICAL REACTIONS; CHEMISTRY; ELEMENTS; ENZYMES; MICROORGANISMS; NONMETALS; ORGANIC COMPOUNDS; OXIDOREDUCTASES; PROTEINS ; SORPTION; VARIATIONS

19/7,DE/9 (Item 4 from file: 103)
DIALOG(R)File 103:Energy SciTec

02784372 NOV-89-081213; EDB-90-001586
Title: *Fuel* *cell* clean waste water discharge system
Author(s)/Editor(s): Grasso, A.P.
Patent No.: US 4855192
Patent Assignee(s): International Fuel Cells Corp., South Windsor, CT
Priority No.: US 7216489 A
Patent Date Filed: 8 Jul 1988
Publication Date: 8 Aug 1989
(vp.)
Language: In English
Availability: Patent and Trademark Office, Box 9, Washington, DC 20232
Abstract: This patent describes a *fuel* *cell* power plant having a power section, and having a water circulating system for cooling the power section. The water circulating system comprising: a water storage tank for storing water used in the *circulating* system; *decontaminating* means for cleaning water in the circulating system; first means for carrying water from the storage tank to the decontaminating means; second means for carrying water from the decontaminating means to the power section for cooling the latter; third means for carrying only clean water from the decontaminating means to the storage tank; fourth

means for carrying contaminated water from the power section to the storage tank; and discharge means for releasing water to ambient surrounding from the third means when the amount of water in the storage tank exceeds a predetermined volume whereby only clean water is discharged into the ambient surroundings from the power plant.
Major Descriptors: *FUEL* *CELL* POWER PLANTS -- WASTE PROCESSING; *WASTE WATER -- WATER TREATMENT
Descriptors: CIRCULATING SYSTEMS; PURIFICATION; WASTE DISPOSAL
Broader Terms: HYDROGEN COMPOUNDS; LIQUID WASTES; MANAGEMENT; OXYGEN COMPOUNDS; POWER PLANTS; PROCESSING; WASTE MANAGEMENT; WASTES; WATER

19/7,DE/10 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

05691724
WATER COOLED *FUEL* *CELL* POWER GENERATING SYSTEM

PUB. NO.: 09-306524 [JP 9306524 A]
PUBLISHED: November 28, 1997 (19971128)
INVENTOR(s): IKEDA GENICHI
ICHIHASHI TATSUYA
OUCHI TAKASHI
MIYAMA HARUMI
FUJII MASATAKA
APPLICANT(s): TOKYO GAS CO LTD [330195] (A Japanese Company or Corporation), JP (Japan)
TOHO GAS CO LTD [352417] (A Japanese Company or Corporation), JP (Japan)
FUJI ELECTRIC CO LTD [000523] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 08-112880 [JP 96112880]
FILED: May 08, 1996 (19960508)
JAPIO CLASS: 42.9 (ELECTRONICS -- Other); 28.1 (SANITATION -- Sanitary Equipment); 35.0 (NEW ENERGY SOURCES -- General)

ABSTRACT

PROBLEM TO BE SOLVED: To obstruct propagation of microbes in the mixed water, keep stable cooling performance, and reduce the running cost by arranging a sterilizing means generating copper ions in the mixed water in a water treatment system to utilize the sterilization of the copper ion.

SOLUTION: A sterilizing means 50 for generating copper ions, arranged in a water treating system 40 constituted with a produced water recovering line 20 and a water treating line 30 is immersed and set in mixed water 28 within a mixed water tank 22, and elutes a copper ion Cu(sup 2+) by reaction with a base or oxygen in the mixed water. The eluted copper ions come ion contact with microbes in a process in which recovered water 29 and

tap water are mixed in a fluid state within the mixed water tank 22, and the propagation of microbes in the mixed water is obstructed by the sterilizing action for obstructing a metabolism of the *microbe* by the *sterilization* of the copper ion. The clogging of a filter 32 caused by the proliferated microbes is avoided, and the supply of steam for reformation to a fuel reforming device 2 is stabilized.

19/7,DE/11 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO

05448812
WATER-COOLED *FUEL* *CELL* POWER GENERATING APPARATUS

PUB. NO.: 09-063612 [JP 9063612 A]
PUBLISHED: March 07, 1997 (19970307)
INVENTOR(s): IKEDA GENICHI
IWASA NOBUHIRO
ICHIHASHI TATSUYA
MURAKAMI TAKASHI
APPLICANT(s): TOKYO GAS CO LTD [330195] (A Japanese Company or Corporation), JP (Japan)
OSAKA GAS CO LTD [000028] (A Japanese Company or Corporation), JP (Japan)
TOHO GAS CO LTD [352417] (A Japanese Company or Corporation), JP (Japan)
FUJI ELECTRIC CO LTD [000523] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 07-210305 [JP 95210305]
FILED: August 18, 1995 (19950818)
JAPIO CLASS: 42.9 (ELECTRONICS -- Other); 35.0 (NEW ENERGY SOURCES -- General)

ABSTRACT

PROBLEM TO BE SOLVED: To provide a water-cooled *fuel* *cell* power generating apparatus in which microbe propagation can be prevented without requiring complicated maintenance work such as washing of a produced water recovering system and a water treating system with chemicals.

SOLUTION: A *fuel* *cell* 1 consisting of layered bodies of a plurality of unit cells and cooling plates 3 is provided with a cooling water circulating system 10 to circulate cooling water 6 to cooling pipes in the cooling plates, a produced water recovering system 20 which condenses steam in waste gases 7, 8 of the *fuel* *cell* and a *fuel* reforming apparatus 2 to recover as water, mixes the water with tap water to give mixed water 26, and store the mixed water 26, and a water treating system 30 which converts the mixed water into pure water 26P and supplies to the cooling water circulating system 10. An ultraviolet sterilization apparatus 41 to

sterilize *microbes* in the mixed water 26 by irradiation of ultraviolet rays is installed in a mixed water flowing route, or the ultraviolet sterilization apparatus 41 and an antibacterial filter 42 are installed at mutually different positions in the mixed water flowing route.

19/7,DE/12 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016011279
WPI Acc No: 2004-169130/200416
Non-thermal plasma reactor for disinfecting biological fluid e.g. blood, has reaction volume between electrodes, comprising discharge initiation and treatment regions separated by barrier
Patent Assignee: CHEN P L (CHEN-I); DENG S (DENG-I); LIN X (LINX-I); MA H (MAHH-I); RUAN R R (RUAN-I); UNIV MINNESOTA (MINU)
Inventor: CHEN P L; DENG S; LIN X; MA H; RUAN R R; BOWMAN R J; OYEN D P M; OYEN D
Number of Countries: 102 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200407066	A1	20040122	WO 2003US13396	A	20030430	200416 B
US 20030180421	A1	20030925	US 2001850284	A	20010507	200416
			US 2003364599	A	20030211	
US 20040022669	A1	20040205	US 2001850284	A	20010507	200416
			US 2002377130	P	20020430	
			US 2003364599	A	20030211	
			US 2003426605	A	20030430	

Priority Applications (No Type Date): US 2003364599 A 20030211; US 2002377130 P 20020430; US 2001850284 A 20010507; US 2003426605 A 20030430
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200407066	A1	E	92	B01J-019/08	
Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SC SD SE SG SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW					
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW					
US 20030180421	A1		31	C12H-001/06	CIP of application US 2001850284 CIP of patent US 6562386
US 20040022669	A1			A61L-002/00	CIP of application US 2001850284 Provisional application US 2002377130 CIP of application US 2003364599

CIP of patent US 6562386

Abstract (Basic): WO 200407066 A1

Abstract (Basic):

NOVELTY - Reactor (100) has reactor inlet (102), reactor outlet (104), electrodes (108,110). Reaction volume (106) between electrodes, has discharge initiation and treatment regions. Initiation region between electrode (108) and treatment region, and treatment region between initiation region and electrode (110), are separated by barrier (112).

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) method of partially sterilizing liquid having living pathogens;

(2) method of partially disinfecting biological fluid of mammal;

(3) *circulating* blood *disinfection* apparatus for partially disinfecting blood of mammal;

(4) probe for insertion into mammal; and

(5) biological fluid treatment apparatus.

USE - Volume discharge non-thermal plasma reactor for pasteurizing and/or sterilizing or disinfecting living-mammal-instillable liquids (such as biological fluids e.g. human and animal blood, blood products such as plasma or lymph, extracellular tissue fluid, cerebrospinal fluid (CSF) of human, dog, horse or cat) for killing pathogen (e.g. bacteria or virus). Also for use in *fuel* *cell* industry and bioreactors. Also for non-thermal plasma treatment such as for treatment of peritonitis, treatment of septicemia with hemodialysis apparatus, treatment of liver or gall bladder abscess, treatment of hepatitis, treatment of viral or bacterial meningitis, treatment of lymph.

ADVANTAGE - Provides safe and efficacious technology that permit cost-saving protocol changes in collection and handling of biological fluids. Treats biological fluids without degrading their natural characteristics or generating toxic byproducts.

DESCRIPTION OF DRAWING(S) - The figure shows a diagrammatic view of a silent-type volume discharge non-thermal plasma reactor.

Non-thermal plasma reactor (100)
Liquid inlet (102)
Liquid outlet (104)
Reaction volume (106)
Electrodes (108,110)
Dielectric barriers (112,114)
pp; 92 DwgNo 1/42

Title Terms: NON; THERMAL; PLASMA; REACTOR; DISINFECT; BIOLOGICAL; FLUID; BLOOD; REACT; VOLUME; ELECTRODE; COMPRISE; DISCHARGE; INITIATE; TREAT; REGION; SEPARATE; BARRIER

Derwent Class: A97; B04; D22; J01; J04; P34

International Patent Class (Main): A61L-002/00; B01J-019/08; C12H-001/06

19/7,DE/13 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015601879
WPI Acc No: 2003-664034/200363
Plant separating hydrogen sulfide from biogas using microorganisms, for use in *fuel* *cells*, mixes process fluid with oxidant in reactor
Patent Assignee: PROFACTOR PRODUKTIONSFORSCHUNGS GMBH (PROF-N)
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
AT 200200532	A	20030515	AT 2002532	A	20020404	200363	B
AT 411332	B	20031115	AT 2002532	A	20020404	200380	

Priority Applications (No Type Date): AT 2002532 A 20020404
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
AT 200200532	A		32	B01D-053/14	
AT 411332	B			B01D-053/14	Previous Publ. patent AT 200200532

Abstract (Basic): AT 200200532 A
Abstract (Basic):

NOVELTY - The process fluid is mixed with oxidant in the reactor.

DETAILED DESCRIPTION - Gaseous oxidant, e.g. air or oxygen, is employed. It is dosed to the process fluid before wetting the microorganisms. For dosing of oxidant, a predetermined quantity of fluid is introduced into the reactor. This is achieved by controlling a liquid column between minimum and maximum levels. On falling below a minimal level, a flow connection between a section of the reactor for oxidant supply and a section for oxidation of the gas component, is interrupted. The connection is a perforated plate with a slide capable of closing its openings. It is connected to the level controllers (18) and pump (11) associated with the liquid column. A bubble column is employed to enrich the process fluid with oxygen. Gas leaving the irrigated bed reactor (3) passes through a droplet separator. Oxygen supply is controlled as a function of oxygen content in the liquid, which is heated, preferably to 20degreesC to 45degreesC. The reactor is at least partially heated by a jacket (30). An instrument measures concentration of salts formed as a result of separating the gas. A lock releases process fluid to remove process fluid containing these products. The process fluid supply control- and locking systems are further detailed.

USE - To purify biogas, especially to remove sulphur. To remove hydrogen sulfide by oxidation with the assistance of *microorganisms*. To *purify* biogas for conversion into electricity in *fuel* *cells*

(the foregoing are claimed applications).

ADVANTAGE - Prior art method and plant are simplified. Oxidant, especially air, is not added to the gas ahead of processing. As a result there is no reduction in the quality of the treated gas, as a result of (nitrogen) dilution. It is added instead, to the liquid, and a high oxygen concentration is achievable in solution. There is no reduction in calorific value of the gas produced and no potentially-explosive mixture formation. Because there is no oxygen content in the gas produced, it is suitable for direct use in *fuel* *cells*. The reactor is operated continuously. It is not switched between oxidation- and oxygen-enrichment states in alternation. This simplifies the plant and reduces its cost. The plant is particularly compact. Existing plants (digesters) exploiting biogas are readily converted for purification, with few problems. Ambient air is fully suitable as the oxidant.

DESCRIPTION OF DRAWING(S) - A schematic plant diagram is shown, of a first implementation.

irrigated bed reactor (3)
pump (11)
level controllers (18)
heating jacket (30)
pp; 32 DwgNo 1/3

Title Terms: PLANT; SEPARATE; HYDROGEN; SULPHIDE; MICROORGANISM; FUEL; CELL ; MIX; PROCESS; FLUID; OXIDANT; REACTOR
Derwent Class: D16; E36; H06; J01; L03; X16
International Patent Class (Main): B01D-053/14
International Patent Class (Additional): B01D-053/48

19/7,DE/14 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015473985
WPI Acc No: 2003-536131/200351
Recuperator in co-generation system, has sterilizer to sterilize water in storage tank, actuated by output power of *fuel* *cell* and main power supply
Patent Assignee: NORITSU KK (NOTS); OSAKA GAS CO LTD (OSAG); SEIBU GAS KK (SEIB-N); TOHO GAS KK (TOGA-N); TOKYO GAS CO LTD (TOLG)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2003056909	A	20030226	JP 2001239228	A	20010807	200351	B

Priority Applications (No Type Date): JP 2001239228 A 20010807
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes

JP 2003056909 A 9 F24H-001/00

Abstract (Basic): JP 2003056909 A
Abstract (Basic):

NOVELTY - The water in the storage tank (5) is heated with the heat exchanger (6) in which the heat medium heated by the solid polymer *fuel* *cell* (1) *flows*. *Sterilizer* provided to sterilize the water in the storage tank, is heated by the output power of *fuel* *cell* and main power supply (15).

DETAILED DESCRIPTION - The recuperator has *fuel* *cell* (1) to heat the heat medium flowing through the heat exchanger (6) to a temperature below the requirement. Sterilizer is equipped with the electric heater (3) to heat the water in storage tank (5) and ultraviolet-irradiator to irradiate ultraviolet radiation in the water. An INDEPENDENT CLAIM is also included for the co-generation system.

USE - In co-generation system (claimed).

ADVANTAGE - Sterilizes the water effectively by utilizing the waste energy efficiently. Prevents reproduction of legionella bacteria.

DESCRIPTION OF DRAWING(S) - The figure shows the outline block diagram of the co-generation system. (Drawing includes non- English language text).

Solid polymer *fuel* *cell* (1)
Electric heater (3)
Storage tank (5)
Heat exchanger (6)
Main power supply (15)
pp; 9 DwgNo 1/7

Title Terms: RECUPERATION; CO; GENERATE; SYSTEM; STERILE; STERILE; WATER; STORAGE; TANK; ACTUATE; OUTPUT; POWER; FUEL; CELL; MAIN; POWER; SUPPLY
Derwent Class: D15; Q74
International Patent Class (Main): F24H-001/00
International Patent Class (Additional): C02F-001/02; C02F-001/32

19/7,DE/15 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015271859
WPI Acc No: 2003-332788/200331
Gas analyzer for respiratory gases, includes measuring head connection including windows, and *fuel* *cell* connection
Patent Assignee: PHASE-IN AB (PHAS-N)
Inventor: ECKERBOM A
Number of Countries: 101 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200317837	A1	20030306	WO 2002SE1528	A	20020826	200331	B

SE 200102862	A	20030301	SE 20012862	A	20010828	200331
SE 519779	C2	20030408	SE 20012862	A	20010828	200331

Priority Applications (No Type Date): SE 20012862 A 20010828
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200317837	A1	E	15	A61B-005/08	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW

SE 200102862	A	A61B-005/08
SE 519779	C2	A61B-005/08

Abstract (Basic): WO 200317837 A1
Abstract (Basic):

NOVELTY - A gas analyzer includes an adapter (1), and a measuring head (2) connection including two windows (7) through which light rays from the measuring head can pass. The adapter includes a *fuel* *cell* (18) connection (16) for measuring the oxygen content of the respiration gases.

DETAILED DESCRIPTION - A gas analyzer comprises an adapter having respirator connectors (4), and hose connectors (3) for a hose leading to a patient. A measuring head connection for a gas analyzer is provided between the respirator connector and the hose connectors. The measuring head connection includes two windows through which light rays from the measuring head can pass. The adapter includes a *fuel* *cell* connection for measuring the oxygen content of the respiration gases.

USE - For quantitative analysis of respiratory gases to and from a patient connected to a respirator for breathing assistance.

ADVANTAGE - The invention enables respiratory gases to be measured and analyzed effectively in one and the same measuring sequence by non-dispersive spectroscopy, and measures and analyzes oxygen gas.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic perspective view of the gas analyzer.

Adapter (1)
Measuring head (2)
Hose connectors (3)
Respirator connectors (4)
Mutually opposing planar sides (6)
Windows (7)
Central aperture (8)
Mutually facing planar surfaces (9)
Passive respiratory gas modifier (14)
Bacteria *filter* (15)

Fuel *cell* connection (16)
Fuel *cell* (18)
pp; 15 DwgNo 1/3
Title Terms: GAS; ANALYSE; RESPIRATION; GAS; MEASURE; HEAD; CONNECT; WINDOW ; FUEL; CELL; CONNECT
Derwent Class: B04; P31; P34; S03
International Patent Class (Main): A61B-005/08
International Patent Class (Additional): A61M-016/00; G01N-033/497

19/7,DE/16 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015271858
WPI Acc No: 2003-332787/200331
Gas analyzer for quantitative analysis of respiratory gases to and from patient, comprises adapter having passive respiratory gas humidifier, and connection for gas analyzer measuring head
Patent Assignee: PHASE-IN AB (PHAS-N)
Inventor: ECKERBOM A
Number of Countries: 101 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200317836	A1	20030306	WO 2002SE1526	A	20020826	200331	B
SE 200102860	A	20030301	SE 20012860	A	20010828	200331	
SE 519766	C2	20030408	SE 20012860	A	20010828	200331	

Priority Applications (No Type Date): SE 20012860 A 20010828
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200317836	A1	E	14	A61B-005/08	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW

SE 200102860	A		A61B-005/08
SE 519766	C2		A61B-005/08

Abstract (Basic): WO 200317836 A1
Abstract (Basic):
NOVELTY - A gas analyzer comprises an adapter (1) having a passive respiratory gas humidifier (14) between a respirator connector (4) and connectors (3) for connecting the hoses to the patient. A connection for a gas analyzer measuring head (2) is provided between the passive

humidifier and the respirator connector.

DETAILED DESCRIPTION - A gas analyzer comprises an adapter having connectors for connection to a hose leading to a patient. The adapter includes a passive respiratory gas humidifier between a respirator connector and the connectors for connecting the hoses to the patient. A connection for a gas analyzer measuring head is provided between the passive humidifier and the respirator connector. The measuring head connector includes two windows (7) through light rays from the measuring head can pass.

USE - For quantitative analysis of respiratory gases to and from a patient connected to a respirator for breathing assistance.

ADVANTAGE - The invention may conveniently be injection-molded from plastic material and be produced for one-time use at a low cost. It also provides protection against cross-contamination.

DESCRIPTION OF DRAWING(S) - The figure is a schematic view of a gas analyzer.

Adapter (1)
Gas analyzer measuring head (2)
Connectors (3)
Respirator connector (4)
Central portion (5)
Planar sides (6)
Windows (7)
Central aperture (8)
Surfaces (9)
Passive respiratory gas humidifier (14)
Bacterial *filter* (15)
Fuel *cell* connection (16)
Fuel *cell* (18)
pp; 14 DwgNo 1/3

Title Terms: GAS; ANALYSE; QUANTITATIVE; ANALYSE; RESPIRATION; GAS; PATIENT ; COMPRISE; PASSIVE; RESPIRATION; GAS; HUMIDIFY; CONNECT; GAS; ANALYSE; MEASURE; HEAD
Derwent Class: B04; P31; P34; S03
International Patent Class (Main): A61B-005/08
International Patent Class (Additional): A61M-016/00; G01N-021/85

19/7,DE/17 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015239744
WPI Acc No: 2003-300670/200329
Respiratory gas analysis arrangement in health care center, has filter for protecting *fuel* *cell* provided between connectors, from bacteria present in respiratory gases
Patent Assignee: PHASE-IN AB (PHAS-N)

Inventor: ECKERBOM A
Number of Countries: 101 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200318093	A1	20030306	WO 2002SE1527	A	20020826	200329	B
SE 200102861	A	20030301	SE 20012861	A	20010828	200334	

Priority Applications (No Type Date): SE 20012861 A 20010828
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200318093	A1	E	12	A61M-016/00	
SE 200102861	A			A61M-016/00	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW

Abstract (Basic): WO 200318093 A1
Abstract (Basic):

NOVELTY - A device for quantitative analysis of respiratory gases to and from a patient connected to a respirator, comprises an adapter (1) with connectors (3,4) for a hose leading to the patient and for a respirator respectively. A *bacterial* *filter* (15) protects a *fuel* *cell* (18) provided between the connectors, from bacteria in the respiratory gases supplied to the patient.

USE - Used in health care center for analyzing respiratory gases to and from a patient connected to a respirator for breathing assistance (claimed).

ADVANTAGE - Cross-contamination is prevented using filter.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic perspective view of quantitative analysis arrangement.

adapter (1)
connectors (3,4)
bacterial *filter* (15)
fuel *cell* (18)
pp; 12 DwgNo 1/3

Title Terms: RESPIRATION; GAS; ANALYSE; ARRANGE; HEALTH; CARE; FILTER; PROTECT; FUEL; CELL; CONNECT; BACTERIA; PRESENT; RESPIRATION; GAS
Derwent Class: B04; P34; S05
International Patent Class (Main): A61M-016/00

19/7,DE/18 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014994677
WPI Acc No: 2003-055192/200305
Vacuum cleaner using *fuel* *cell*
Patent Assignee: LG ELECTRONICS INC (GLDS)
Inventor: HWANG Y J; KIM H D; KIM I G; LEE M H; LEE S H; PARK I G; PARK M S ; YOON H S
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
KR 2002056160	A	20020710	KR 200085470	A	20001229	200305	B

Priority Applications (No Type Date): KR 200085470 A 20001229
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
KR 2002056160	A		1	A47L-009/28	

Abstract (Basic): KR 2002056160 A
Abstract (Basic):
NOVELTY - A vacuum cleaner using a *fuel* *cell* is provided to *disinfect* a *bacillus* or a microbe lived at a back filter by using a high heat generated from a *fuel* *cell* stack.
DETAILED DESCRIPTION - A vacuum cleaner comprise a case(10), a back filter(16), a fan(17) and a fan motor(18), a *fuel* *cell* stack(19), a fuel tank(20), and a disinfect line(30). The back filter for filtering a dust or a waste is installed at a front inside of the case. The fan and fan motor are installed at a rear side of the back filter, and generates a suction force. The *fuel* *cell* stack generates an electric for driving the fan motor. The fuel tank stores a fuel for supplying to the *fuel* *cell* stack. The disinfection line supplies a high heat generated from the *fuel* *cell* stack to the back filter, thereby *disinfecting* a *bacillus* or a microbe lived at the back filter.
pp; 1 DwgNo 1/10
Title Terms: VACUUM; CLEAN; FUEL; CELL
Derwent Class: P28; X27
International Patent Class (Main): A47L-009/28

19/7,DE/19 (Item 8 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014985766
WPI Acc No: 2003-046281/200304
Fuel *cell* system for vehicle, *sterilizes* *microorganisms* present in cooling water circulated through circulation line in response to command signal

Patent Assignee: NISSAN MOTOR CO LTD (NSMO)
Inventor: ITOU Y; TAKEKAWA T
Number of Countries: 002 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20020132143	A1	20020919	US 200282147	A	20020226	200304	B
JP 2002270211	A	20020920	JP 200171560	A	20010314	200304	

Priority Applications (No Type Date): JP 200171560 A 20010314
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020132143	A1		15	H01M-008/04	
JP 2002270211	A		8	H01M-008/06	

Abstract (Basic): US 20020132143 A1
Abstract (Basic):
NOVELTY - A sterilizer (18) located in a cooling water *circulation* line (35) *sterilizes* the *microorganisms* present in the cooling water by causing an ultraviolet irradiation to pass through the cooling water in response to a command signal from a control unit (51).
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for method of inhibiting microorganisms in *fuel* *cell* system.
USE - For inhibiting microorganisms in *fuel* *cell* system used as power source in vehicle, used for domestic and industrial applications.

ADVANTAGE - Effectively *sterilizes* the *microorganisms* present in the cooling water, thereby minimizing adverse effects caused by circulation of the cooling water containing microorganisms. Thus it is possible for obtaining a high reliability of the *fuel* *cell* system. Since the sterilization is performed through irradiation of ultraviolet light, the *fuel* *cell* system can be simplified in structure, thereby reducing manufacturing cost. Since the sterilization operation is initiated in response to a command signal, it is possible to minimize excessive electric power consumption.
DESCRIPTION OF DRAWING(S) - The figure shows the structural view of the *fuel* *cell* system.
Sterilizer (18)
Circulation line (35)
Control unit (51)
pp; 15 DwgNo 1/7
Title Terms: FUEL; CELL; SYSTEM; VEHICLE; STERILE; MICROORGANISM; PRESENT; COOLING; WATER; CIRCULATE; THROUGH; CIRCULATE; LINE; RESPOND; COMMAND; SIGNAL
Derwent Class: P34; X16; X21
International Patent Class (Main): H01M-008/04; H01M-008/06
International Patent Class (Additional): A61L-002/10; C02F-001/32; C12M-001/34

19/7,DE/20 (Item 9 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014730746
WPI Acc No: 2002-551450/200259
Foodstuff waste treatment plant for treating waste foodstuff, comprises co-generation plant, compost storage tanks, package apparatus and composting plant consisting of hopper, crusher and *stream* seasoning *sterilizer*
Patent Assignee: HOTEL NEW OTANI KK (HOTE-N)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2002086101	A	20020326	JP 2000279622	A	20000914	200259	B

Priority Applications (No Type Date): JP 2000279622 A 20000914
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2002086101	A		6	B09B-003/00	

Abstract (Basic): JP 2002086101 A
Abstract (Basic):

NOVELTY - The foodstuffs waste treatment plant (1) comprises composting plant (5), co-generation plant (3), compost storage tank (17) and package apparatus (19). The composting plant consists of a hopper (11) into which waste foodstuff is temporarily stored, crusher (13) and a *stream* seasoning *sterilizer* (15). The co-generation plant consists of a microgas turbine (7) or a *fuel* *cell* and waste gas boiler (9).

USE - For treating foodstuff waste material.

ADVANTAGE - The foodstuff waste treatment plant is compact, hence saves space and can be installed easily. The treatment of foodstuff waste material is performed smoothly and orderly. An additional installation for drain emission is eliminated. Since the hopper and crusher are connected with the *stream* seasoning *sterilizer* through a piping, an inexpensive foodstuffs waste treatment plant results.

DESCRIPTION OF DRAWING(S) - The figure is the explanatory drawing of the foodstuff waste treatment plant. (Drawing includes non-English language text).

Foodstuffs waste treatment plant (1)
Co-generation plant (3)
Composting plant (5)
Micro gas turbine (7)
Waste gas boiler (9)
Hopper (11)

Crusher (13)
Steam seasoning sterilizer (15)
Compost storage tanks (17)
Package apparatus (19)
pp; 6 DwgNo 1/2
Title Terms: FOOD; WASTE; TREAT; PLANT; TREAT; WASTE; FOOD; COMPRISE; CO; GENERATE; PLANT; COMPOST; STORAGE; TANK; PACKAGE; APPARATUS; COMPOST; PLANT; CONSIST; HOPPER; CRUSH; STREAM; SEASON; STERILE
Derwent Class: D16; P43
International Patent Class (Main): B09B-003/00
International Patent Class (Additional): B09B-005/00; C05F-005/00

19/7,DE/21 (Item 10 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009347027
WPI Acc No: 1993-040500/199305
Hydrogen@ bacteria for retaining hydrogenase, used for hydrogen@ prodn. - maintains activity under oxidising conditions, also used electrode catalyst for *fuel* *cell* and bio-reactor, in place of platinum@
Patent Assignee: DENRYOKU CHUO KENKYUSHO (DENY)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 4365474	A	19921217	JP 91165121	A	19910610	199305	B

Priority Applications (No Type Date): JP 91165121 A 19910610
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 4365474	A		9	C12N-001/20	

Abstract (Basic): JP 4365474 A
Hydrogen bacteria which retain hydrogenase that maintains activity under oxidising conditions is new. The bacteria are grown at pH 3 and 30 - 60 deg. C, e.g. 3H-1 (FERM-12275), 3-H3 (FERM-12277) or 3L-2 (FERM-12276). Hydrogenase is obtd. from the bacteria.
It catalyses the reaction of 2H(+)- to form H2 and the reaction of H2 to form 2H (+) . It may be used in e.g. H2 prodn., electrode catalyst for *fuel* *cell*, bioreactor, etc., in place of Pt catalyst.
USE/ADVANTAGE - Acid-fast and thermophilic bacteria and mesophile may be sepd. and purified. Hydrogenase retained in the hydrogen bacteria is more stable than hydrogenase of Alcaligenes eutrophus.
In an example, Sepn. and purificn. of the strains is as effected by using a medium of (NH4)2S04(1.0 g), K2HP04(1.0 g), MgS04.7H20(0.3 g), FeS04.7H20(1.0 mg), CaCl2 (1.0 mg), NiS04.7H20(0.06 mg), soln. of small amt. of salts (2 m) and distilled water (1000 ml). Sepd.

bacteria were *purified* with a gellite pla
Dwg.0/0
Title Terms: HYDROGEN; BACTERIA; RETAIN; HYDROGENASE; HYDROGEN; PRODUCE; MAINTAIN; ACTIVE; OXIDATION; CONDITION; ELECTRODE; CATALYST; FUEL; CELL; BIO; REACTOR; PLACE; PLATINUM
Derwent Class: D16; E36; J04; L03
International Patent Class (Main): C12N-001/20
International Patent Class (Additional): C12N-009/02; C12N-001/20; C12R-001-01

19/7,DE/22 (Item 11 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008020135
WPI Acc No: 1989-285247/198939
Waste water discharge system for *fuel* *cell* - comprises means of transferring tank water to power station via decontamination vessel
Patent Assignee: INT FUEL CELLS CORP (ITFU); INTE FUEL CELLS COR (ITFU-N)
Inventor: GRASSO A P
Number of Countries: 011 Number of Patents: 008
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4855192	A	19890808	US 88216489	A	19880708	198939	B
EP 408796	A	19910123	EP 89113355	A	19890720	199104	N
DK 8903578	A	19910120				199118	N
JP 3077278	A	19910402	JP 89204528	A	19890807	199119	N
CA 1310358	C	19921117	CA 606090	A	19890719	199252	N
EP 408796	B1	19950118	EP 89113355	A	19890720	199507	N
DE 68920737	E	19950302	DE 620737	A	19890720	199514	N
			EP 89113355	A	19890720		
JP 96034107	B2	19960329	JP 89204528	A	19890807	199618	N

Priority Applications (No Type Date): US 88216489 A 19880708; CA 606090 A 19890719; EP 89113355 A 19890720; JP 89204528 A 19890807
Cited Patents: 3.Jnl.Ref; JP 61253770; JP 61259795; JP 62217570; US 4120787 ; US 4670357; US 4855192; WO 8202541
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4855192	A		6		
EP 408796	A				
Designated States (Regional): DE ES FR GB IT NL SE					
EP 408796	B1	E	8	H01M-008/04	
Designated States (Regional): DE ES FR GB IT NL SE					
DE 68920737	E			H01M-008/04	Based on patent EP 408796
JP 96034107	B2		5	H01M-008/06	Previous Publ. patent JP 3077278
CA 1310358	C			H01M-008/04	

Abstract (Basic): US 4855192 A

A *fuel* *cell* plant includes a power section which has a cooling water circulating system. Water is stored in a tank and is decontaminated in a separate vessel. A first conduit carries water from the storage tank to the decontamination vessel, a second interconnects the decontamination vessel and the power section, a third conduit carries clean water from the vessel to the tank, and a fourth conduit carries contaminated water from the power section to the storage tank. Water is discharged to the ambient from the third conduit when the amt. of water in the storage tank exceeds a predetermined vol.

ADVANTAGE - Only clean water is discharged to ambient.

2/5

Abstract (Equivalent): EP 408796 B

A *fuel* *cell* power plant having a power section, and having a water circulating system for cooling the power section, said water circulating system comprising: a) a water storage tank (6) for storing water used in said *circulating* system; b) *decontaminating* means (10) for cleaning water in said circulating system; c) first means (9) for carrying water from said storage tank (6) to said decontaminating means (10); d) second means (12) for carrying water from said decontaminating means (10) to said power section (2) for cooling the latter; e) third means (14) for carrying clean water from said decontaminating means (10) to said storage tank (6) and opening therein with an entry port (14a); f) fourth means (8) for carrying contaminated water from said power section (2) to said storage tank (6); and g) discharge means (16) for releasing water to ambient surroundings from said water circulation system when the amount of water in said storage tank (6) exceeds a predetermined volume and reaches a predetermined level, characterised by the fact that h) said discharge means (16) comprise a drain conduit (24,30) extends upwardly above said predetermined level of the water in the storage tank (6) and opens into the ambient surrounds with a discharge port (24a,30a) located above said level, said conduit (24,30) being connected to a branch tube (26,32) leading to the storage tank (6) and opening into the same.

Dwg.1/4

Title Terms: WASTE; WATER; DISCHARGE; SYSTEM; FUEL; CELL; COMPRISE; TRANSFER; TANK; WATER; POWER; STATION; DECONTAMINATE; VESSEL

Derwent Class: D15; L03; X16

International Patent Class (Main): H01M-008/04; H01M-008/06

International Patent Class (Additional): H01M-002/00; H01M-008/00

? t s20/7,de/all

20/7,DE/1 (Item 1 from file: 6)

DIALOG(R)File 6:NTIS

2209993 NTIS Accession Number: DE2001-10822/XAB
Analytical performance of direct-hydrogen-fueled polymer electrolyte *fuel* *cell* (PEFC) systems for transportation applications
Doss, E. D.
Argonne National Lab., IL.
Corp. Source Codes: 001960000
Sponsor: Department of Energy, Washington, DC.
Report No.: ANL/TD/CP-97554
2 Jun 1998 10p
Languages: English
Journal Announcement: USGRDR0125
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NTIS Prices: PC A02/MF A01
Country of Publication: United States
Contract No.: W-31109-ENG-38
The performance of a stand-alone polymer electrolyte *fuel* *cell* (PEFC) system directly fueled by hydrogen has been evaluated for transportation vehicles. The study was carried out using a systems analysis code and a vehicle analysis code. The systems code includes models for the various PEFC components and is applicable for steady-state and transient situations. At the design point the system efficiency is above 50% for a 50-kW system. The efficiency improves under partial load and approaches 60% at 40% load, as the *fuel* *cell* operating point moves to lower current densities on the V-I polarization curve. At much lower loads, the system efficiency drops because of the deterioration in the performance of the compressor, expander, and eventually the *fuel* *cell* . The system performance suffers at lower temperatures, as the V-I characteristic curve for the *fuel* *cell* shifts downward because of the increased ohmic losses. The results of the transient analysis indicate that the hydrogen-fueled PEFC system can start rather rapidly, within seconds from ambient conditions. However, the warm-up time constant to reach the design operating temperatures is about 180 s. It is important during this period for the *coolant* to bypass the system *radiator* until the *coolant* temperature approaches the design temperature for the *fuel* *cell*. The systems analysis code has been applied to two mid-size vehicles: the near-term Ford AIV Sable and the future P2000 vehicle. The results of this study show that the PEFC system in these vehicles can respond well to the demands of the FUDS and Highway driving cycles, with both warm and cold starting conditions. The results also show that the *fuel*-*cell* AIV Sable vehicle has impressive gains in fuel economy over that of the internal combustion engine vehicle. However, this vehicle will not be able to meet the PNGV goal of 80 mpg. On the other hand, the P2000 vehicle approaches this goal with variable efficiency of the compressor and expander. It is expected to exceed that goal by a big margin, if the efficiency of the

compressor and expander can be maintained constant (at 0.8) over the power range of the *fuel* *cell* system.
Descriptors: *Fuel* *cells*; *Hydrogen; Energy conversion; Fuel consumption; Internal combustion engines; Performance; Power range; Proton exchange membrane *fuel* *cells*; Systems analysis; Electrolytes; Transportation industry

20/7,DE/2 (Item 2 from file: 6)
DIALOG(R)File 6:NTIS

1428503 NTIS Accession Number: DE89003969
Transient Heat Pipe Model for a Multimegawatt Space Power Application
Carlson, L. W.
Argonne National Lab., IL.
Corp. Source Codes: 001960000; 0448000
Sponsor: Department of Energy, Washington, DC.
Report No.: CONF-890103-3
1989 5p
Languages: English Document Type: Conference proceeding
Journal Announcement: GRAI8911; NSA1400
Symposium on space nuclear power systems, Albuquerque, NM, USA, 9 Jan 1989.
Portions of this document are illegible in microfiche products. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A02/MF A01
Country of Publication: United States
Contract No.: W-31109-ENG-38
The Argonne ''Monolithic Solid Oxide *Fuel* *Cell*'' power generation system has been described previously. In a ''burst power'' generation mode, hundreds of megawatts of DC power would be generated for a finite time interval. An accompanying nuclear power generation system would be used to regenerate the spent reactants (hydrogen and oxygen) in this closed system for subsequent re-use. Although the Argonne space power supply was designed to be a closed system in terms of material effluents, it had to reject the waste heat from the *fuel* *cells* (which operate with approximately 70% conversion efficiency). The heat rejection method included multiple heat pipes operated in parallel to convey thermal energy from the *fuel* *cell* *coolant* for ultimate *radiation* -rejection to space. These individual heat pipes featured a convectively heated evaporator section, an adiabatic section leading out from the *fuel* *cell* chamber to space, and the condenser section radiating to space. The transient behavior of these heat rejection heat pipes was not considered previously. This paper addresses the problem, showing that the heat pipes as conceptually designed also

satisfy the stringent transient power generation---heat rejection requirements of the multimegawatt power generation system. 4 refs., 4 figs. (ERA citation 14:011007)
Descriptors: Heat Pipes; *Space Power Reactors; *Spacecraft Power Supplies; *Heat Transfer; *Fuel* *Cells*; High-Voltage Pulse Generators; Pulses; Waste Heat

20/7,DE/3 (Item 3 from file: 6)
DIALOG(R)File 6:NTIS

0591159 NTIS Accession Number: DP-1392/XAB
DESIGN: A Computer Program to Design SRP Fuel and Target Assemblies
Baker, W. H.
Savannah River Ecology Lab., Aiken, S.C.
Corp. Source Codes: 5668000
Sponsor: Energy Research and Development Administration.
Apr 76 55p
Journal Announcement: GRAI7703; NSA0100
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A04/MF A01
Contract No.: AT(07-2)-1
The computer program DESIGN calculates optimum dimensions of fuel or target assemblies in the Savannah River Plant reactors to provide a desired *coolant* flow or calculates the total D sub 2 O circulation and the assembly *coolant* flow given a reactor core size and set of assembly dimensions. The program solves by iterative procedures the equation for steady-state one-dimensional *coolant* flow in the assembly and reactor system and for steady-state one-dimensional (*radial*) heat *flow* in the tubes of the assembly. This report discusses the approach to assembly design, the equations used in the program, the logic for the solution of the equations, and, finally, the input and output for the program. (ERA citation 01:025864)
Descriptors: Computer codes; *Production reactors; *Savannah river plant; Cooling; D codes; Design; Fluid flow; Fuel assemblies; *Fuel* channels; Reactor *cells*

20/7,DE/4 (Item 4 from file: 6)
DIALOG(R)File 6:NTIS

0329025 NTIS Accession Number: AD-846 894/XAB
High Performance *Fuel* *Cell*

(Quarterly technical rept. no. 8, 1 Oct-31 Dec 68)
Vannatta, D. W.
Allis-Chalmers Mfg. Co., Milwaukee, Wis. Advanced Electrochemical Products Div.
Corp. Source Codes: 403464
Jan 69 112p
Journal Announcement: GRAI7215
Distribution Limitation now Removed.
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC E03/MF A01
Contract No.: AF 33(615)-3790; AF-3145; 314521
The objective of this contract is to develop the technology required for a high performance H2 - O2 *fuel* *cell* system for future Air Force space vehicle applications. Work was performed in fabrication and preparations for testing of two, lightweight, internal liquid-cooled *fuel* *cell* stacks. Work was also performed in the areas of thermal control subsystem design. (Author)
Descriptors: *Fuel* *cells*; Design; Oxygen; Hydrogen; Liquid *filters*; *Coolant* pumps; Thermostats; Valves; Check valves; Hydroxides; Water; Recovery; Weight; *Coolants*; Spacecraft components; Specifications

20/7,DE/5 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

7809224 INSPEC Abstract Number: A2004-02-2841-008, B2004-01-8220B-059
Title: Validation of HELIOS neutron cross-section library for RBMK reactors against the data from the critical facility experiments
Author(s): Jasiulevicius, A.; Sehgal, B.R.
Author Affiliation: Nucl. Power Safety Div., R. Inst. of Technol., Stockholm, Sweden
Conference Title: Tenth International Conference on Nuclear Engineering p.12 pp.
Publisher: ASME, New York, NY, USA
Publication Date: 2002 Country of Publication: USA CD-ROM pp.
Material Identity Number: XX-2002-00172
Conference Title: Tenth International Conference on Nuclear Engineering
Conference Date: 14-18 April 2002 Conference Location: Arlington, VA, USA
Language: English Document Type: Conference Paper (PA)
Treatment: Practical (P)
Abstract: Experimental Critical Facility for RBMK reactor were modeled using the CORETRAN code. As an input data for the code, the neutron cross section data for *fuel* and nonfuel *cells* were calculated using the

HELIOS code. There is an acceptable level of agreement with the experimental data for CORETRAN calculations performed using HELIOS cross sections for criticality state calculation, control rod reactivity worths, fuel assembly and control rod imitators filling with *coolant* effects and *radial* and axial neutron flux density measurements. Also, the HELIOS cross section data provides a better 3D neutronics calculations. (13 Refs)
Subfile: A B
Descriptors: fission reactor cooling; fission reactor core control; fission reactor fuel; fission reactor physics; fission reactor safety; fission research reactors; nuclear criticality safety; nuclear engineering computing

20/7,DE/6 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06073577
E.I. No: EIP02266988489
Title: Performance evaluation of an energy recovery system for fuel reforming of PEM *fuel* *cell* power plants
Author: Cao, Yiding; Guo, Zhen
Corporate Source: Department of Mech. and Chem. Eng. Florida International University, Miami, FL 33199, United States
Source: Journal of Power Sources v 109 n 2 Jul 1 2002. p 287-293
Publication Year: 2002
CODEN: JPSODZ ISSN: 0378-7753
Language: English
Document Type: JA; (Journal Article) Treatment: T; (Theoretical); X; (Experimental)
Journal Announcement: 0206W5
Abstract: This paper describes an energy recovery system that recovers waste thermal energy from a *fuel* *cell* stack and uses it for fuel reforming purposes. The energy recovery system includes a throttling valve, a heat exchanger, and a compressor, and is coupled with a *coolant* loop of the *fuel* *cell* stack. The feed stock of a fuel reformer, which is primarily a mixture of water and fuel, is vaporized in the heat exchanger and is compressed to a sufficiently high pressure before it is ducted into the fuel reformer. The performance of a *fuel* *cell* power plant equipped with the energy recovery system is evaluated. The results indicate that the power plant efficiency can be increased by more than 40% compared to that of a *fuel* *cell* power plant without the energy recovery system. Additionally, up to 90% of the waste heat generated in the *fuel* *cell* stack is recovered. As a result, the required heat dissipation capacity of the radiator that is used for cooling the *fuel* *cell* stack can be drastically reduced. 5 Refs.

Descriptors: *Fuel* *cells*; Power plants; Waste heat utilization; Protons; Compressors; *Coolants*; Heat losses; *Radiators*; Valves (mechanical); Vaporization; High pressure effects; Heat exchangers; Ion exchange membranes

20/7,DE/7 (Item 1 from file: 103)
DIALOG(R)File 103:Energy SciTec

04720775 EDB-01-070020
Title: Analytical performance of direct-hydrogen-fueled polymer electrolyte *fuel* *cell* (PEFC) systems for transportation applications.
Author(s)/Editor(s): Doss, E. D.
Corporate Source: Argonne National Lab., IL (United States)
Sponsoring Organization: DOE; US Department of Energy (United States)
Conference Title: 33rd Intersociety Energy Conversion Engineering Conference (IECEC)
Conference Location: Colorado Springs, CO (United States)
Conference Date: 2 Aug 1998 - 6 Aug 1998
Publication Date: 2 Jun 1998
(10 p)
Report Number(s): ANL/TD/CP-97554
Order Number: DE00010822
Contract Number (DOE): W-31109-ENG-38
Language: English
Contact: Mary Hale^ (630) 252-5610^ prs anl.gov
Availability: OSTI as DE00010822; PURL: https://www.osti.gov/servlets/purl/10822-MTxHbX/webviewable/
Abstract: The performance of a stand-alone polymer electrolyte *fuel* *cell* (PEFC) system directly fueled by hydrogen has been evaluated for transportation vehicles. The study was carried out using a systems analysis code and a vehicle analysis code. The systems code includes models for the various PEFC components and is applicable for steady-state and transient situations. At the design point the system efficiency is above 50% for a 50-kW system. The efficiency improves under partial load and approaches 60% at 40% load, as the *fuel* *cell* operating point moves to lower current densities on the V-I polarization curve. At much lower loads, the system efficiency drops because of the deterioration in the performance of the compressor, expander, and eventually the *fuel* *cell*. The system performance suffers at lower temperatures, as the V-I characteristic curve for the *fuel* *cell* shifts downward because of the increased ohmic losses. The results of the transient analysis indicate that the hydrogen-fueled PEFC system can start rather rapidly, within seconds from ambient conditions. However, the warm-up time constant to reach the design operating temperatures is about 180 s. It is important during this period for the *coolant* to bypass the system *radiator* until the

coolant temperature approaches the design temperature for the *fuel* *cell*. The systems analysis code has been applied to two mid-size vehicles: the near-term Ford AIV Sable and the future P2000 vehicle. The results of this study show that the PEFC system in these vehicles can respond well to the demands of the FUDS and Highway driving cycles, with both warm and cold starting conditions. The results also show that the *fuel*-*cell* AIV Sable vehicle has impressive gains in fuel economy over that of the internal combustion engine vehicle. However, this vehicle will not be able to meet the PNGV goal of 80 mpg. On the other hand, the P2000 vehicle approaches this goal with variable efficiency of the compressor and expander. It is expected to exceed that goal by a big margin, if the efficiency of the compressor and expander can be maintained constant (at 0.8) over the power range of the *fuel* *cell* system.

Descriptors: ENERGY CONVERSION; *FUEL* *CELLS*; FUEL CONSUMPTION; HYDROGEN; INTERNAL COMBUSTION ENGINES; PERFORMANCE; POWER RANGE; PROTON EXCHANGE MEMBRANE *FUEL* *CELLS*; SYSTEMS ANALYSIS

Broader Terms: CONVERSION; DIRECT ENERGY CONVERTERS; ELECTROCHEMICAL CELLS; ENERGY CONSUMPTION; NONMETALS; HEAT ENGINES; SOLID ELECTROLYTE *FUEL* *CELLS*; ELEMENTS; ENGINES; *FUEL* *CELLS*

20/7,DE/8 (Item 2 from file: 103)
DIALOG(R)File 103:Energy SciTec

04534973 EDB-00-002749
Title: Analytical performance of direct-hydrogen fueled polymer electrolyte *fuel* *cell* (PEFC) systems for transportation applications
Author(s): Doss, E.D.; Ahluwalia, R.; Kumar, R.
Title: Proceedings of the 33. intersociety energy conversion engineering conference
Author(s)/Editor(s): Anghaie, S. (ed.)
Corporate Source: Argonne National Lab., IL (United States)
Conference Title: 33rd Intersociety Energy Conversion Engineering Conference
Conference Location: Colorado Springs, CO (United States)
Conference Date: 2 Aug 1998 - 6 Aug 1998
Publisher: LaGrange Park, IL (United States) American Nuclear Society
Publication Date: 1998
p 7, Paper IECEC.98.289 ([2800] p)
ISBN: 0-89448-639-X
Note: 1 CD-ROM. Operating system required: Windows 3.x; Windows 95/NT; Macintosh; UNIX. All systems need 2X CD-ROM drive.
Language: English
Availability: American Nuclear Society, ANS Publications Department, 555 N. Kensington Avenue, LaGrange Park, IL 60526 (US); ANS Order No. 700262
Abstract: The performance of a stand-alone polymer electrolyte *fuel*

cell (PEFC) system directly fueled by hydrogen has been evaluated for transportation vehicles. The study was carried out using a systems analysis code and a vehicle analysis code. The systems code includes models for the various PEFC components and is applicable for steady-state and transient situations. At the design point, the system efficiency is above 50% for a 50-kW system. The efficiency improve2048der partial load and approaches 60% at 40% load, as the *fuel* *cell* operating point moves to lower current densities on the V-I polarization curve. At much lower loads, the system efficiency drops because of the deterioration in the performance of the compressor, expander, and eventually the *fuel* *cell*. The system performance suffers at lower temperatures, as the V-I characteristic curve for the *fuel* *cell* shifts downward because of the increased ohmic losses. The results of the transient analysis indicate that the hydrogen-fueled PEFC system can start rather rapidly, within seconds from ambient conditions. However, the warm-up time constant to reach the design operating temperatures is about 180 s. It is important during this period for the *coolant* to bypass the system *radiator* until the *coolant* temperature approaches the design temperature for the *fuel* *cell*. The systems analysis code has been applied to two mid-size vehicles: the near-term Ford AIV Sable and the future P2000 vehicle. The results of this study show that the PEFC system in these vehicles can respond well to the demands of the FUDS and Highway driving cycles, with both warm and cold starting conditions. The results also show that the *fuel*-*cell* AIV Sable vehicle has impressive gains in fuel economy over that of the internal combustion engine vehicle. However, this vehicle will not be able to meet the PNGV goal of 80 mpg. On the other hand, the P2000 vehicle approaches this goal with variable efficiency of the compressor and expander. It is expected to exceed that goal by a big margin, if the efficiency of the compressor and expander can be maintained constant (at 0.8) over the power range of the *fuel* *cell* system.

Descriptors: HYDROGEN *FUEL* *CELLS*; SOLID ELECTROLYTE *FUEL* *CELLS*; PERFORMANCE; ELECTRIC-POWERED VEHICLES; COMPUTERIZED SIMULATION; EFFICIENCY; FUEL CONSUMPTION

Broader Terms: *FUEL* *CELLS*; VEHICLES; SIMULATION; ENERGY CONSUMPTION; DIRECT ENERGY CONVERTERS; ELECTROCHEMICAL CELLS

20/7,DE/9 (Item 3 from file: 103)
DIALOG(R)File 103:Energy SciTec

03212289 NEDO-91-960311; EDB-91-139725
Title: *Fuel* *cell* cooling system
Original Title: Nenryo denchi reikyaku system
Author(s)/Editor(s): Osaki, K.; Shima, K. (Chiba (Japan)); Okada, M. (Tokyo (Japan))

Patent No.: JP 3-95866
Patent Assignee(s): Toyo Engineering Corp.
Patent Date Filed: 7 Sep 1989
Publication Date: 22 Apr 1991
(5 p)
Language: In Japanese
Availability: Available from Japan Patent Information Organization or International Patent Documentation Center
Abstract: There are two systems, water-cooling and air-cooling for cooling the reaction heat of the *fuel* *cell* off, but these systems have defects respectively and are not satisfactory. In view of this, this invention concerns a *fuel* *cell* cooling system suitable for the case of using material other than air or water, in particular hydrogen gas as cooling medium. In other words, this invention proposes a system to supply and introduce into the reaction gas channel hydrogen gas excessively, far from the necessary and sufficient amount of the gas for making an electrochemical reaction in each single cell and at the same time, to use also as cooling medium for removing the reaction heat generated in each single cell. Furthermore, this invention proposes, with regard to the above, to supply hydrogen gas via a pipe line from a large hydrogen gas generator at a remote place, to supply hydrogen gas via an appropriate refining device from an industrial facility which produces hydrogen gas as byproduct, and to use high purity hydrogen gas obtainable via a PSA device, etc.. 3 figs.
Major Descriptors: *COOLANTS* -- HYDROGEN; **COOLANTS* -- *PURIFICATION*; **FUEL* *CELLS* -- COOLING SYSTEMS; **FUEL* *CELLS* -- REACTION HEAT; *PIPELINES -- TRANSPORT
Descriptors: HEAT EXCHANGERS; REFINING; REFORMER PROCESSES; THERMAL EFFICIENCY
Broader Terms: CHEMICAL REACTIONS; DIRECT ENERGY CONVERTERS; EFFICIENCY; ELECTROCHEMICAL CELLS; ELEMENTS; ENERGY SYSTEMS; ENTHALPY; NONMETALS; PHYSICAL PROPERTIES; PROCESSING; THERMODYNAMIC PROPERTIES

20/7,DE/10 (Item 4 from file: 103)
DIALOG(R)File 103:Energy SciTec

02913836 AIX-21-071978; EDB-90-131077
Title: Taking the nasties from nuclear gases
Author(s): Sanford, L.
Source: Professional Engineering (UK) v 3:2. Coden: PFLEE ISSN: 0953-6639
Publication Date: Feb 1990
p 24-25
Language: In English
Abstract: The advanced gas cooled reactor (AGR) was developed from the Magnox reactor, and incorporates several of its features, for example a

graphite moderator, carbon dioxide *coolant*, and on load refuelling. In terms of gas clean up, however, it soon became apparent that because of its higher power density, increased fuel burn-up and higher *fuel* *cell* and peak *coolant* gas temperatures, it presented greater problems, and it became necessary for the nuclear industry to develop new solutions. To this end the CEGB's ongoing Filter Development Study was set up to test filter designs as they become available. Barrier filters offer the highest removal efficiency at present, but at the expense of greater power loss. Of the possible filter materials, stainless steel in the form of a fibre medium offers the highest structural integrity. (author).
Major Descriptors: *FILTERS* -- *COOLANT CLEANUP SYSTEMS*
Descriptors: AGR TYPE REACTORS; FIBERS; STAINLESS STEELS
Broader Terms: ALLOYS; COOLING SYSTEMS; ENERGY SYSTEMS; ENRICHED URANIUM REACTORS; GAS COOLED REACTORS; GCR TYPE REACTORS; GRAPHITE MODERATED REACTORS; HIGH ALLOY STEELS; IRON ALLOYS; IRON BASE ALLOYS; PRIMARY *COOLANT* CIRCUITS; REACTOR COMPONENTS; REACTOR COOLING SYSTEMS; REACTORS; STEELS

20/7,DE/11 (Item 5 from file: 103)
DIALOG(R)File 103:Energy SciTec

02274272 ERA-14-011007; EDB-89-020006
Author(s): Carlson, L.W.
Title: A transient heat pipe model for a multimegawatt space power application
Corporate Source: Argonne National Lab., IL (USA)
Conference Title: 6. symposium on space nuclear power systems
Conference Location: Albuquerque, NM, USA Conference Date: 9 Jan 1989
Publication Date: 1989
p 5
Report Number(s): CONF-890103-3
Order Number: DE89003969
Contract Number (DOE): W-31109-ENG-38
Note: Portions of this document are illegible in microfiche products
Language: English
Availability: NTIS, PC A02/MF A01 - OSTI; 1.
Abstract: The Argonne ''Monolithic Solid Oxide *Fuel* *Cell*'' power generation system has been described previously. In a ''burst power'' generation mode, hundreds of megawatts of DC power would be generated for a finite time interval. An accompanying nuclear power generation system would be used to regenerate the spent reactants (hydrogen and oxygen) in this closed system for subsequent re-use. Although the Argonne space power supply was designed to be a closed system in terms of material effluents, it had to reject the waste heat from the *fuel* *cells* (which operate with approximately 70% conversion efficiency).

The heat rejection method included multiple heat pipes operated in parallel to convey thermal energy from the *fuel* *cell* *coolant* for ultimate *radiation*-rejection to space. These individual heat pipes featured a convectively heated evaporator section, an adiabatic section leading out from the *fuel* *cell* chamber to space, and the condenser section radiating to space. The transient behavior of these heat rejection heat pipes was not considered previously. This paper addresses the problem, showing that the heat pipes as conceptually designed also satisfy the stringent transient power generation---heat rejection requirements of the multimegawatt power generation system. 4 refs., 4 figs.
Major Descriptors: HEAT PIPES -- HEAT TRANSFER; *SPACE POWER REACTORS; *SPACECRAFT POWER SUPPLIES -- *FUEL* *CELLS*
Descriptors: HIGH-VOLTAGE PULSE GENERATORS; PULSES; WASTE HEAT
Broader Terms: DIRECT ENERGY CONVERTERS; ELECTROCHEMICAL CELLS; ELECTRONIC EQUIPMENT; ENERGY; ENERGY TRANSFER; EQUIPMENT; FUNCTION GENERATORS; HEAT; MOBILE REACTORS; POWER REACTORS; POWER SUPPLIES; PULSE GENERATORS ; REACTORS; WASTES

20/7,DE/12 (Item 6 from file: 103)
DIALOG(R)File 103:Energy SciTec

00688254 AIX-11-555454; EDB-80-127784
Author(s): Kajiwara, H.; Tezuka, M.; Kasahara, F. (Nippon Atomic Industry Group Co. Ltd., Tokyo); Handa, N.
Title: Impurity trap in fuel assemblies (Patent)
Patent No.: JP 54-102493 A
Patent Assignee(s): Nippon Atomic Industry Group Co. Ltd., Tokyo, Toshiba Corp., Kawasaki, Kanagawa (Japan)
Publication Date: 11 Aug 1979
p 3
Language: Japanese
Abstract: A method is described of preventing clogging in a fuel pin bundle with impurities in the *coolants* by providing a mesh-like trap having a flow cross section smaller than that for the unit *cell* of the *fuel* pin bundle in the *coolant* pass below the fuel pin bundle. A plurality of crossing grid plates are arranged in a zigzag manner to form a mesh. The size of the mesh is smaller than the flow cross section for the unit *cell* defined with *fuel* pins. The impurity trap of such an arrangement is provided between the lower shield for the fuel assemblies and the fuel pin bundle, so that gap in the fuel pin bundle can be protected against clogging with impurities in the *coolants*. This can prevent boiling due to local cloggings.
Major Descriptors: FUEL ASSEMBLIES -- HEAT TRANSFER; *PRIMARY *COOLANT* CIRCUITS -- MECHANICAL *FILTERS*
Descriptors: FBR TYPE REACTORS; FILTRATION; FUEL PINS; IMPURITIES;

PURIFICATION
Broader Terms: BREEDER REACTORS; COOLING SYSTEMS; ENERGY TRANSFER; EPITHERMAL REACTORS; FAST REACTORS; FILTERS; FUEL ELEMENTS; REACTOR COMPONENTS; REACTOR COOLING SYSTEMS; REACTORS; SEPARATION PROCESSES

20/7,DE/13 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

06796185
WASTE HEAT RECOVERING DEVICE AND ITS CONTROL METHOD

PUB. NO.: 2001-023666 [JP 2001023666 A]
PUBLISHED: January 26, 2001 (20010126)
INVENTOR(s): TABATA ATSUSHI
APPLICANT(s): TOYOTA MOTOR CORP
APPL. NO.: 11-194627 [JP 99194627]
FILED: July 08, 1999 (19990708)

ABSTRACT

PROBLEM TO BE SOLVED: To promote compatibility of temperature control in a heat generating part such as a *fuel* *cell* and a motor, will enhancement of waste heat recovering efficiency.

SOLUTION: A vehicle loaded with a *fuel* *cell* 60 and a motor 20 is equipped with a cooling device comprising a *radiator* 92, a *coolant* path 94, and a cooling pump 93, for cooling the *fuel* *cell* and the motor acting as a heat generating part; and thermoelectric elements 95, 96. By cooling the heat generating part with the cooling device, the heat generating part is controlled in a temperature state suitable for operation, and at the same time, a heating value being transmitted to the thermoelectric elements 95, 96 can be adjusted. The temperature control of the heat generating part and the enhancement of waste that recovering efficiency can be realized.

20/7,DE/14 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015992920
WPI Acc No: 2004-150770/200415
Cooling device for *fuel* *cell* used in vehicle, has electric insulating layer in tube for insulating inner and outer surface of *coolant* routes
Patent Assignee: TOYOTA JIDOSHA KK (TOYT)

Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2004039486	A	20040205	JP 2002196274	A	20020704	200415	B

Priority Applications (No Type Date): JP 2002196274 A 20020704
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2004039486	A		15	H01M-008/04	

Abstract (Basic): JP 2004039486 A
Abstract (Basic):

NOVELTY - A radiator (220) has several *coolant* routes (231) for passing *coolant* to *fuel* *cell* and gap (232) between the *coolant* routes, to pass fluid for heat exchange. A tube (230) surrounding the *coolant* route has electric insulating layer for insulating the inner and outer surface of *coolant* route. The *radiation* fins (234) made of aluminum transmit the heat of *coolant* to the fluid.

USE - For *fuel* *cell* used in vehicle.

ADVANTAGE - Improves the insulation of the *fuel* *cell*.

DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of the radiator. (Drawing includes non-English language text).

radiator (220)
radiator core (224)
tube (230)
coolant route (231)
gap (232)
radiation fin (234)
pp; 15 DwgNo 3/14

Title Terms: COOLING; DEVICE; FUEL; CELL; VEHICLE; ELECTRIC; INSULATE; LAYER; TUBE; INSULATE; INNER; OUTER; SURFACE; *COOLANT*; ROUTE
Derwent Class: X16
International Patent Class (Main): H01M-008/04

20/7,DE/15 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015922677
WPI Acc No: 2004-080517/200408
Fuel *cell* system, e.g. for vehicle, includes air supply system comprising air blower and humidifier, and *coolant* circulation system supplying low temperature *coolant* to the *fuel* *cell* stack and comprising reservoir, pump and radiator
Patent Assignee: ASIA PACIFIC FUEL CELL TECHNOLOGIES LTD (ASPA-N); CHENG Y (CHEN-I); YANG J Y (YANG-I)
Inventor: CHENG Y; YANG J Y

Number of Countries: 002 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20030203258	A1	20031030	US 2003417080	A	20030417	200408	B
JP 2003317761	A	20031107	JP 2003113183	A	20030417	200408	

Priority Applications (No Type Date): TW 2002U205611 U 20020424
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030203258	A1		11	H01M-008/04	
JP 2003317761	A		9	H01M-008/04	

Abstract (Basic): US 20030203258 A1
Abstract (Basic):

NOVELTY - *Fuel* *cell* system includes an air supply system comprising:

(i) a blower for driving the air to a *fuel* *cell* stack and a humidifier to humidify the air supplied to the stack; and

(ii) a *coolant* circulation system supplying a low temperature *coolant* to the *fuel* *cell* stack and comprising a *coolant* reservoir, a pump driving the circulation of the *coolant*, a *radiator* to convert high to low temperature *coolant*, and a heat exchanger.

DETAILED DESCRIPTION - *Fuel* *cell* system comprises:

(a) a *fuel* *cell* stack;

(b) an air supply system supplying an air flow to the *fuel* *cell* stack and comprising a blower for driving the air to the stack and a humidifier for humidifying the air supplied to the *fuel* *cell* stack;

(c) a hydrogen supply system supplying hydrogen to the *fuel* *cell* stack and comprising a hydrogen storage zone in which hydrogen is stored and from which a hydrogen flow is supplied to the *fuel* *cell* stack, and a pressure regulating device for regulating the hydrogen flow, a hydrogen recirculator for receiving excess hydrogen from the *fuel* *cell* stack and forcing it back into the stack to induce a hydrogen flow inside the stack;

(d) a *coolant* circulation system supplying a low temperature *coolant* to the *fuel* *cell* stack for absorbing heat from the stack and becoming high temperature *coolant*, and comprising a *coolant* reservoir in which the *coolant* is stored, a pump driving the circulation of the *coolant*, and a *radiator* for removing heat from the high temperature *coolant* and converting the high temperature *coolant* into the low temperature *coolant*; and

(e) a control circuit electrically controlling the flow and pressure regulating device, the blower, the pump and the fan.

The *coolant* reservoir comprises a ventilation device for removing air bubbles from the *coolant*. The *coolant* circulation system further comprises a heat exchanger for transferring heat from the high temperature *coolant* to the hydrogen storage. The radiator comprises a

fan for generating an air flow through it to remove heat from the *coolant*.

USE - The *fuel* *cell* system is used for generating electrical power energy e.g. for electric vehicle.

ADVANTAGE - The liquid cooling device and air humidifying device ensure high performance of the *fuel* *cell* stack.

DESCRIPTION OF DRAWING(S) - The figure is a system block diagram of a *fuel* *cell* system.

pp; 11 DwgNo 2/5

Title Terms: FUEL; CELL; SYSTEM; VEHICLE; AIR; SUPPLY; SYSTEM; COMPRISE; AIR; BLOW; HUMIDIFY; *COOLANT*; CIRCULATE; SYSTEM; SUPPLY; LOW; TEMPERATURE; *COOLANT*; FUEL; CELL; STACK; COMPRISE; RESERVOIR; PUMP; RADIATOR

Derwent Class: E17; G04; L03; X16; X21

International Patent Class (Main): H01M-008/04

International Patent Class (Additional): H01M-016/00

20/7,DE/16 (Item 3 from file: 350)

DIALOG(R)File 350:Derwent WPIX

015677074

WPI Acc No: 2003-739261/200370

Cooling device for use in engine of vehicle, sets temperature of *coolant* that *flows* from *radiator* to engine during warm-up mode completion higher than temperature of *coolant* during temperature control mode

Patent Assignee: NIPPONDENSO CO LTD (NPDE)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2003269173	A	20030925	JP 200274462	A	20020318	200370	B

Priority Applications (No Type Date): JP 200274462 A 20020318

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2003269173	A		10	F01P-011/16	

Abstract (Basic): JP 2003269173 A

Abstract (Basic):

NOVELTY - A flow control valve (40) stops the flow of *coolant* from *radiator* (20) to engine (10), during warm-up mode and controls the flow amount of *coolant* from *radiator* through bypass route (30) into engine during temperature-control mode. The temperature of *coolant* during temperature control mode is set such that *coolant* temperature during warm-up mode completion is higher than *coolant* temperature during temperature control mode.

USE - Cooling device for use in engine, electrically driven motor, inverter circuit, *fuel* *cell* of vehicle.

ADVANTAGE - Prevents the fall of temperature of engine, after warm-up completion.

DESCRIPTION OF DRAWING(S) - The figure shows an explanatory drawing of the cooling device. (Drawing includes non-English language text).

engine (10)
radiator (20)
bypass route (30)
flow-amount adjustment valve (40)
electronic control unit (ECU) (100)
pp; 10 DwgNo 1/11

Title Terms: COOLING; DEVICE; ENGINE; VEHICLE; SET; TEMPERATURE; *COOLANT*; FLOW; RADIATOR; ENGINE; WARM; UP; MODE; COMPLETE; HIGH; TEMPERATURE; *COOLANT*; TEMPERATURE; CONTROL; MODE
Derwent Class: Q51; Q52; X11; X12; X16; X21
International Patent Class (Main): F01P-011/16
International Patent Class (Additional): F01P-003/20; F01P-007/16; F02D-045/00

20/7,DE/17 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015430109
WPI Acc No: 2003-492251/200346
Fuel *cell* thermal management system, has *fuel* *cell* stack and *coolant* circuit with *coolant* pump, *radiant* and heat exchanger to remove heat from stack
Patent Assignee: PLUG POWER INC (PLUG-N)
Inventor: WALSH M M
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030044662	A1	20030306	US 2001316498	P	20010831	200346 B
			US 2002232296	A	20020830	

Priority Applications (No Type Date): US 2001316498 P 20010831; US 2002232296 A 20020830
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030044662	A1		13	H01M-008/04	Provisional application US 2001316498

Abstract (Basic): US 20030044662 A1
Abstract (Basic):

NOVELTY - The *fuel* *cell* system has *fuel* *cell* stack (202) and *coolant* circuit (204) with a pump (208) to *circulate* a

coolant, *radiator* (218) and liquid-to-liquid heat exchanger (220) to remove heat from the stack. The *coolant* from the circuit flows through the first side of heat exchanger. The second side of heat exchanger circulates a fluid outside the system, through the exchanger, to heat the fluid.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of thermal management for a *fuel* *cell* system.

USE - Used in *fuel* *cell* systems.

ADVANTAGE - The exchanger circulates fluid e.g. hot water, to heat an application, external to the *fuel* *cell* system and external systems can be hooked up to the system without disassembling the system enclosure.

DESCRIPTION OF DRAWING(S) - The drawing shows the schematic diagram of a *fuel* *cell* management system.

Fuel *cell* stack (202)
Coolant circuit (204)
Pump (208)
Radiator (218)
Heat exchanger. (220)
pp; 13 DwgNo 2/4

Title Terms: FUEL; CELL; THERMAL; MANAGEMENT; SYSTEM; FUEL; CELL; STACK; *COOLANT*; CIRCUIT; *COOLANT*; PUMP; RADIANT; HEAT; EXCHANGE; REMOVE; HEAT; STACK
Derwent Class: X16
International Patent Class (Main): H01M-008/04

20/7,DE/18 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015424039
WPI Acc No: 2003-486181/200346
Cooling device for *fuel* *cell* electric vehicle, has compressor for supplying oxidizing agent to *fuel* *cell* *coolant* circuit to circulate *coolant* and hydraulic motor to actuate hydraulic fan which ventilates *radiator* supplying *coolant*
Patent Assignee: HONDA MOTOR CO LTD (HOND)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2003007324	A	20030110	JP 2001187958	A	20010621	200346	B

Priority Applications (No Type Date): JP 2001187958 A 20010621
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2003007324	A		9	H01M-008/04	

Abstract (Basic): JP 2003007324 A
Abstract (Basic):
NOVELTY - A hydraulic motor (55) actuating a hydraulic fan (54), is actuated by oil pressure of a hydraulic pump (56).
USE - For electric vehicle.
ADVANTAGE - Since the cooling fan is actuated by a small-sized hydraulic motor actuated by oil pressure of hydraulic pump, a separated motor is not needed for cooling fan. Hence size of the apparatus is reduced.
DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of the *fuel* *cell* cooling device in electric vehicle. (Drawing includes non-English language text).
Hydraulic fan (54)
Hydraulic motor (55)
Hydraulic pump (56)
pp; 9 DwgNo 1/4
Title Terms: COOLING; DEVICE; FUEL; CELL; ELECTRIC; VEHICLE; COMPRESSOR; SUPPLY; OXIDATION; AGENT; FUEL; CELL; *COOLANT*; CIRCUIT; CIRCULATE; *COOLANT*; HYDRAULIC; MOTOR; ACTUATE; HYDRAULIC; FAN; RADIATOR; SUPPLY; *COOLANT*
Derwent Class: Q13; Q14; X16; X21; X22
International Patent Class (Main): H01M-008/04
International Patent Class (Additional): B60K-001/04; B60L-011/18; H01M-008/10

20/7,DE/19 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015002309
WPI Acc No: 2003-062824/200306
Fuel *cell* cooling device comprises pair of ring-shaped penetration portions in wall surface of *fuel* *cell* storage case, through which *coolant* penetrates and is circulated between *fuel* *cell* and *radiator* along *coolant* *flow* line
Patent Assignee: HONDA MOTOR CO LTD (HOND)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2002280039	A	20020927	JP 200179575	A	20010319	200306	B

Priority Applications (No Type Date): JP 200179575 A 20010319
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2002280039	A		7	H01M-008/04	

Abstract (Basic): JP 2002280039 A

Abstract (Basic):
NOVELTY - The wall surface of a *fuel* *cell* storage case (6) comprises a pair of ring-shaped penetration portions (7) through which a *coolant* penetrates and is circulated between the *fuel* *cell* (3) and a radiator (4) along a *coolant* flow line (5). The penetration portions (7) are connected to the ground of *fuel* *cell* controller.
USE - For cooling *fuel* *cell* mounted in vehicle.
ADVANTAGE - The variation of potential at the ground level is suppressed by the *coolants*.
DESCRIPTION OF DRAWING(S) - The figure shows a model of the *fuel* *cell* cooling device.
Fuel *cell* (3)
Radiator (4)
Coolant flow line (5)
Fuel *cell* storage case (6)
Ring-shaped penetration portion (7)
pp; 7 DwgNo 1/6
Title Terms: FUEL; CELL; COOLING; DEVICE; COMPRISE; PAIR; RING; SHAPE; PENETRATE; PORTION; WALL; SURFACE; FUEL; CELL; STORAGE; CASE; THROUGH; *COOLANT*; PENETRATE; CIRCULATE; FUEL; CELL; RADIATOR; *COOLANT*; FLOW; LINE
Derwent Class: X16; X21
International Patent Class (Main): H01M-008/04

20/7,DE/20 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014959354
WPI Acc No: 2003-019868/200301
Fuel *cell* construction having flow field plates that provide inward and outward *radial* *flow* fields respectively for the fuel and oxidant
Patent Assignee: MORGAN CRUCIBLE CO PLC (MORS)
Inventor: BOFF J C; TURPIN M C
Number of Countries: 101 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200291513	A1	20021114	WO 2002GB1771	A	20020418	200301	B
GB 2377078	A	20021231	GB 200115711	A	20010627	200303	
GB 2377078	B	20030604	GB 200115711	A	20010627	200345	
EP 1386371	A1	20040204	EP 2002718350	A	20020418	200410	
			WO 2002GB1771	A	20020418		

Priority Applications (No Type Date): GB 200127525 A 20011116; GB 200110910 A 20010503; GB 200110911 A 20010503; GB 200110912 A 20010503; GB 200110913 A 20010503; GB 200110915 A 20010503; GB 200115711 A 20010627; GB 200124448 A 20011011

Patent Details:
Patent No Kind Lan Pg Main IPC Filing Notes
WO 200291513 A1 E 17 H01M-008/24
Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW
GB 2377078 A H01M-008/04
GB 2377078 B H01M-008/04
EP 1386371 A1 E H01M-008/24 Based on patent WO 200291513
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR

Abstract (Basic): WO 200291513 A1
Abstract (Basic):
NOVELTY - The flow field plate (702) is hexagonal and has a fuel supply aperture (703). Branching flow field patterns (704) connect the fuel supply aperture (703) to a fuel drain (705) that leads to a drainage port (708). A land (706) is configured to receive seals. The oxidant flow on the adjacent plate is inward to an to an oxidant drain port (709). A *coolant* inlet port (711) communicates via a *coolant* track to a *coolant* outlet port (712)
USE - To improve operation of *fuel* *cell* and provide a more uniform generation of electricity across the membrane electrode.
ADVANTAGE - Prevents asymmetric distribution of pressure within the cell.
DESCRIPTION OF DRAWING(S) - Plan view showing flow field plate
Plate (702)
Fuel supply (703)
Flow pattern (704)
Fuel drain (705)
Land (706)
Fuel drainage port (708)
Oxidant drain port (709)
Coolant inlet (711)
Coolant outlet (712)
pp; 17 DwgNo 7/7
Title Terms: FUEL; CELL; CONSTRUCTION; FLOW; FIELD; PLATE; INWARD; OUTWARD; RADIAL; FLOW; FIELD; RESPECTIVE; FUEL; OXIDANT
Derwent Class: X16; X25
International Patent Class (Main): H01M-008/04
International Patent Class (Additional): C25B-001/04; C25B-015/08; H01M-008/02; H01M-008/10; H01M-008/24

20/7,DE/21 (Item 8 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014851198
WPI Acc No: 2002-671904/200272
Module for *purifying* *coolant* of *fuel* *cell* system
Patent Assignee: HYUNDAI MOTOR CO LTD (HYUN-N)
Inventor: KIM N H
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
KR 2002032684	A	20020504	KR 200063120	A	20001026	200272	B
KR 380077	B	20030411	KR 200063120	A	20001026	200359	

Priority Applications (No Type Date): KR 200063120 A 20001026
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
KR 2002032684	A		1	H01M-002/36	
KR 380077	B			H01M-002/36	Previous Publ. patent KR 2002032684

Abstract (Basic): KR 2002032684 A
Abstract (Basic):
NOVELTY - Provided is a module for *purifying* *coolant* of *fuel* *cell* system having an improved construction, in which water filter and water tank are combined to simplify a construction of the *fuel* *cell* system.
DETAILED DESCRIPTION - The module for *purifying* *coolant* of *fuel* *cell* system comprises a water tank(20) for storing *coolant* circulating in the *fuel* *cell* system, and a water filter(30) for *purifying* the *coolant*. The water *filter*(30) and water tank(20) are combined to simplify a construction of the *fuel* *cell* system. The module is installed in *fuel* *cell* system of *fuel* *cell* automobile using *fuel* *cell*.
pp; 1 DwgNo 1/10
Title Terms: MODULE; PURIFICATION; *COOLANT*; FUEL; CELL; SYSTEM
Derwent Class: X16
International Patent Class (Main): H01M-002/36

20/7,DE/22 (Item 9 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014720686
WPI Acc No: 2002-541390/200258
Fuel *cell* cooling system for motor vehicle, supplies *coolant* between heat exchangers, so as to raise temperature of *coolant* from ion

exchanger
Patent Assignee: HONDA MOTOR CO LTD (HOND)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2002110205	A	20020412	JP 2000293202	A	20000927	200258	B

Priority Applications (No Type Date): JP 2000293202 A 20000927
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2002110205	A		7	H01M-008/04	

Abstract (Basic): JP 2002110205 A
Abstract (Basic):

NOVELTY - A heat exchanger (15) placed near a *fuel* *cell* (FC) receives an ion removal primary *coolant* which is cooled by heat exchanger (3) and a heat *radiator* (16). The *coolants* of the both heat exchangers exchange heat mutually, so as to raise the temperature of *coolant* from ion exchanger (14).

USE - For cooling *fuel* *cells* such as hydrogen ion exchange film type *fuel* *cell* used in motor vehicle.

ADVANTAGE - Ensures effective temperature management, by preventing damage of ion exchange resin.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of the *fuel* *cell* cooling system. (Drawing includes non-English language text).

Heat exchangers (3,15)
Ion exchanger (14)
Heat radiator (16)
Fuel *cell* (FC)
pp; 7 DwgNo 1/4

Title Terms: FUEL; CELL; COOLING; SYSTEM; MOTOR; VEHICLE; SUPPLY; *COOLANT* ; HEAT; EXCHANGE; SO; RAISE; TEMPERATURE; *COOLANT*; ION; EXCHANGE
Derwent Class: X16; X21
International Patent Class (Main): H01M-008/04
International Patent Class (Additional): H01M-008/10

20/7,DE/23 (Item 10 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014605926
WPI Acc No: 2002-426630/200245
Supplying of hydrogen gas stream to *fuel* *cell* anode, involves introducing feed gas stream to adsorption module having chemically distinct adsorbents which adsorb contaminant to produce pure hydrogen gas stream

Patent Assignee: QUESTAIR TECHNOLOGIES INC (QUES-N); BROWN M J (BROW-I); JOHANNES E P (JOHA-I); KEEFER B G (KEEF-I); ROY S (ROYS-I); SAWADA J A (SAWA-I)
Inventor: KEEFER B; ROY S; SAWADA J; BROWN M; JOHANNES E; BROWN M J; JOHANNES E P; KEEFER B G; SAWADA J A
Number of Countries: 098 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200235623	A2	20020502	WO 2001CA1523	A	20011026	200245	B
CA 2324699	A1	20020427	CA 2324699	A	20001027	200245	
CA 2324702	A1	20020427	CA 2324702	A	20001027	200245	
US 20020098394	A1	20020725	US 200139552	A	20011026	200254	
AU 200214858	A	20020506	AU 200214858	A	20011026	200257	
EP 1344270	A2	20030917	EP 2001983346	A	20011026	200362	
			WO 2001CA1523	A	20011026		

Priority Applications (No Type Date): CA 2324702 A 20001027; CA 2324699 A 20001027
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200235623	A2	E	55	H01M-008/00	
	Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PH PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW				
	Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW				
CA 2324699	A1	E		H01M-008/06	
CA 2324702	A1	E		H01M-008/06	
US 20020098394	A1			H01M-008/04	
AU 200214858	A			H01M-008/00	Based on patent WO 200235623
EP 1344270	A2	E		H01M-008/06	Based on patent WO 200235623
	Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR				

Abstract (Basic): WO 200235623 A2
Abstract (Basic):

NOVELTY - A feed gas stream containing hydrogen and a contaminant is introduced into adsorption module having adsorbents (A,B), steam reforming catalyst and water gas shift reaction catalyst. The adsorbents are chemically distinct, and one of the adsorbent (A or B) adsorbs contaminant in feed gas *stream* to produce *purified* gas *stream* of hydrogen. The *purified* *stream* is introduced to a *fuel* *cell* anode.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

(1) separation of carbon monoxide from gas stream containing hydrogen, involves introducing the feed stream to the rotary pressure

swing adsorption module for separating portion(s) of carbon monoxide, and introducing *purified* gas *stream* to *fuel* *cell* anode;

(2) electrical current generating system which has a gas source containing hydrogen, at least one adsorption module which partially purifies the gas, and at least one *fuel* *cell* defining an anode inlet for receiving *purified* gas *stream* from the adsorption module;

(3) system for supplying hydrogen gas to *fuel* *cell* anode which has hydrogen gas generating system having outlet for discharging gas containing hydrogen and contaminants, respective contaminant separation zones, and *fuel* *cell* anodes which is attached to the outlet of contaminant (B) separation zone; and

(4) process for providing gas stream containing hydrogen and oxygen-enriched gas stream to *fuel* *cell* which involves introducing the oxygen-enriched gas *stream* and *purified* hydrogen gas *stream* into *fuel* *cell*, introducing separation exhaust gas stream as fuel into combustion engine for driving devices such as compressors, vacuum pumps or electric generator.

USE - For providing gas stream containing hydrogen to *fuel* *cell* anode, used for electric power generation, particularly for vehicle propulsion and for small scale stationary power generation.

ADVANTAGE - Purification of reformate hydrogen, energy-efficient pressure swing adsorption system (PSA) oxygen enrichment, heat recovery from the *fuel* *cell* stack and from combustion of hydrogen PSA tail gas, and thermal powering of air compression for the oxygen PSA and of any PSA vacuum pumping are performed so as to minimize the size of the *fuel* *cell* stack while maximizing overall energetic efficiency of energy conversion from the raw fuel. The hydrogen gas delivery system supplies purified hydrogen gas to the anode gas inlet, and recirculate hydrogen gas from anode gas exit back to anode gas inlet with increased purity so as to avoid accumulation of impurities in the anode channel. Even when high hydrogen purity is specified for the PSA, a small bleed from the end of the anode channel back to the feed pressurization step of the hydrogen PSA is avoided. The accumulation of contaminant due to equipment imperfections or operational transient upsets, is eliminated.

DESCRIPTION OF DRAWING(S) - The figure shows an axial section of the rotary pressure swing adsorption systems module.

PSA module (1)

pp; 55 DwgNo 1/9

Title Terms: SUPPLY; HYDROGEN; GAS; STREAM; FUEL; CELL; ANODE; INTRODUCING; FEED; GAS; STREAM; ADSORB; MODULE; CHEMICAL; DISTINCT; ADSORB; ADSORB; CONTAMINATE; PRODUCE; PURE; HYDROGEN; GAS; STREAM

Derwent Class: E36; J01; J04; L03; X16

International Patent Class (Main): H01M-008/00; H01M-008/04; H01M-008/06

International Patent Class (Additional): B60L-011/18; H01M-008/10; H01M-008/22

20/7,DE/24 (Item 11 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014262017
WPI Acc No: 2002-082715/200211
Functional integration of multiple components for *fuel* *cell* power plant, uses strong characteristics of each component to compensate for weak characteristics of other components
Patent Assignee: INT FUEL CELLS LLC (ITFU); GRASSO A P (GRAS-I); ISOM J D (ISOM-I); KABIR Z (KABI-I); SAITO K (SAIT-I); UTC FUEL CELLS LLC (UTCF-N)
Inventor: GRASSO A P; ISOM J D; KABIR Z; SAITO K; VAN DINE L L; VARTANIAN G
Number of Countries: 094 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200178178	A1	20011018	WO 2001US10730	A	20010402	200211 B
AU 200153100	A	20011023	AU 200153100	A	20010402	200213
US 20020009625	A1	20020124	US 2000544103	A	20000406	200214
			US 2001966978	A	20010927	
US 6451466	B1	20020917	US 2000544103	A	20000406	200264

Priority Applications (No Type Date): US 2000544103 A 20000406; US 2001966978 A 20010927
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200178178	A1	E	23	H01M-008/06	
AU 200153100	A			H01M-008/06	Based on patent WO 200178178
US 20020009625	A1			H01M-008/04	Cont of application US 2000544103
US 6451466	B1			H01M-008/06	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

Abstract (Basic): WO 200178178 A1
Abstract (Basic):
NOVELTY - The inventive design of *fuel* *cell* power plant (10) includes plural, functionally integrated components. A *fuel* *cell* assembly (20) is provided with a fuel stream, an oxidant stream and a *coolant* stream. The power plant integrates a mass and heat recovery device for transferring thermal energy and moisture between first and second gaseous streams. A burner (70) processes the fuel exhausted from the assembly (20) during its operation. In a housing chamber the oxidant stream exhausted from assembly (20) is combined with the gaseous stream exhaust from the burner, and the resultant air-flow from

the common chamber is directed back to the mass and heat recovery device as the first gaseous stream.

USE - To produce *fuel* *cell* power plant, achieving self-sufficient water balance without requiring condensing heat exchanger, for use e.g. in motor vehicle manufacture.

ADVANTAGE - Plural beneficial operating attributes, including inlet oxidant stream humidification, reduced weight/balance of plant as a whole, and the *cleansing* of *coolant* within the overall system to remove potentially harmful and debilitating contamination, all contributing to efficient plant operation, from high performance and reliable plant of low volume/weight.

DESCRIPTION OF DRAWING(S) - The drawing illustrates schematically a *fuel* *cell* power plant in accordance with one embodiment of the inventive design.

General assembly of plant (10)
Fuel *cell* assembly (20)
Anode electrode (30)
Cathode electrode (40)
Electrolyte disposed between anode and cathode (50)
Oxidant pump (60)
Burner (70)
Burner exhaust stream (75)
De-gasifier for removing contaminants from *coolant*, exhausted from assembly (20) (80)
Accumulator (90)
Enthalpy recovery device (95)
pp; 23 DwgNo 1/3

Title Terms: FUNCTION; INTEGRATE; MULTIPLE; COMPONENT; FUEL; CELL; POWER; PLANT; STRONG; CHARACTERISTIC; COMPONENT; COMPENSATE; WEAK; CHARACTERISTIC; COMPONENT
Derwent Class: X16; X21
International Patent Class (Main): H01M-008/04; H01M-008/06
International Patent Class (Additional): H01M-008/02

20/7,DE/25 (Item 12 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014214473
WPI Acc No: 2002-035171/200205
Device for recovering water for on-board current *fuel* *cell* system has connection between *coolant* circuit(s) via heat exchanger to at least one output gas flow from *fuel* *cell* system
Patent Assignee: DAIMLERCHRYSLER AG (DAIM); AUTENRIETH R (AUTE-I); KONRAD G (KONR-I)
Inventor: AUTENRIETH R; KONRAD G
Number of Countries: 004 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 10007244	A1	20010906	DE 1007244	A	20000217	200205 B
US 20010028972	A1	20011011	US 2001785659	A	20010220	200205
FR 2806533	A1	20010921	FR 20012129	A	20010216	200205
JP 2001283891	A	20011012	JP 200137952	A	20010215	200205

Priority Applications (No Type Date): DE 1007244 A 20000217

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 10007244	A1		4	H01M-008/04	
US 20010028972	A1			H01M-008/04	
FR 2806533	A1			H01M-008/06	
JP 2001283891	A		4	H01M-008/06	

Abstract (Basic): DE 10007244 A1

Abstract (Basic):

NOVELTY - The device has a connection between the *coolant* circuit (1) of the vehicle radiator (6) and/or the *coolant* circuit of an air conditioning system via a heat exchanger (7) to at least one output gas flow from the *fuel* *cell* system (8). The output gas flow consists of the anode output gas flow and/or the cathode output gas flow and/or the output gas flow from a gas generation system (9).

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following: a method of operating a device for recovering water for an on-board current *fuel* *cell* system.

USE - For recovering water for an on-board current *fuel* *cell* system in a vehicle.

ADVANTAGE - Enables sufficient water to be recovered on board a vehicle to operate a *fuel* *cell* system.

DESCRIPTION OF DRAWING(S) - The drawing shows a schematic representation of an arrangement for recovering water for an on-board current *fuel* *cell* system in a vehicle with an internal combustion engine

radiator *coolant* circuit (1)

vehicle's radiator (6)

heat exchanger (7)

fuel *cell* system (8)

gas generation system (9)

fuel *cell* (10)

pp; 4 DwgNo 1/1

Title Terms: DEVICE; RECOVER; WATER; BOARD; CURRENT; FUEL; CELL; SYSTEM; CONNECT; *COOLANT*; CIRCUIT; HEAT; EXCHANGE; ONE; OUTPUT; GAS; FLOW; FUEL ; CELL; SYSTEM

Derwent Class: Q12; Q13; Q14; X16; X21

International Patent Class (Main): H01M-008/04; H01M-008/06

International Patent Class (Additional): B60H-001/32; B60K-011/02; B60L-001/00; H01M-008/10; H01M-016/00

20/7,DE/26 (Item 13 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014115551
WPI Acc No: 2001-599763/200168
Regeneration method for *fuel* *cell*, has purification unit which purifies cooling medium and returns at least portion of *purified* *coolant* to cooling unit
Patent Assignee: TOYOTA JIDOSHA KK (TOYT)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2001155750	A	20010608	JP 99339788	A	19991130	200168	B

Priority Applications (No Type Date): JP 99339788 A 19991130
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2001155750	A		8	H01M-008/04	

Abstract (Basic): JP 2001155750 A
Abstract (Basic):
NOVELTY - A hydrogen filling unit (30) fills an alloy tank (14) with hydrogen. The alloy tank supplies hydrogen to a *fuel* *cell* (12). A cooling unit (50) circulates a cooling medium to the tank and the *fuel* *cell* while hydrogen is filled in the tank. The cooling medium is returned back to a purification unit (70) after the cooling operation. At least a portion of *purified* *coolant* is returned back to the cooling unit.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for cooling medium.
USE - For regeneration of hydrogen filling device.
ADVANTAGE - Regenerates *fuel* *cell* system efficiently due to recycling of portion of cooling medium after purification.
DESCRIPTION OF DRAWING(S) - The figure shows the block diagram explaining the regeneration method for *fuel* *cell*. (Drawing includes non-English language text).
Fuel (12)
Alloy tank (14)
Hydrogen filling unit (30)
Cooling unit (50)
Purification unit (70)
pp; 8 DwgNo 2/3
Title Terms: REGENERATE; METHOD; FUEL; CELL; PURIFICATION; UNIT; PURIFICATION; COOLING; MEDIUM; RETURN; PORTION; PURIFICATION; *COOLANT*; COOLING; UNIT

Derwent Class: L03; X16
International Patent Class (Main): H01M-008/04
International Patent Class (Additional): H01M-008/06

20/7,DE/27 (Item 14 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013924534
WPI Acc No: 2001-408747/200143
Coolant treatment system for *fuel* *cell* power plant, includes degasifying apparatus for removing contaminants from anti-freeze solution and humidifying oxidant
Patent Assignee: INT FUEL CELLS LLC (ITFU); UTC FUEL CELLS LLC (UTCF-N)
Inventor: BREAULT R D; GRASSO A P; VAN DINE L; VAN DINE L L
Number of Countries: 094 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200147052	A1	20010628	WO 2000US34355	A	20001218	200143	B
AU 200124373	A	20010703	AU 200124373	A	20001218	200164	
US 6428916	B1	20020806	US 99468027	A	19991220	200254	
DE 10085326	T	20021121	DE 1085326	A	20001218	200302	
			WO 2000US34355	A	20001218		
JP 2003523047	W	20030729	WO 2000US34355	A	20001218	200358	
			JP 2001547686	A	20001218		

Priority Applications (No Type Date): US 99468027 A 19991220
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200147052	A1	E	37	H01M-008/04	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

AU 200124373	A		H01M-008/04	Based on patent WO 200147052
US 6428916	B1		H01M-008/04	
DE 10085326	T		H01M-008/04	Based on patent WO 200147052
JP 2003523047	W	36	H01M-008/04	Based on patent WO 200147052

Abstract (Basic): WO 200147052 A1
Abstract (Basic):
NOVELTY - A *coolant* treatment system includes degasifying apparatus (145) for accepting oxidant and anti-freeze solution. The oxidant and the anti-freeze solution interacting each other are treated in the degasifying apparatus by removing contaminants from the

anti-freeze solution and humidifying the oxidant. The degasifying apparatus provides *fuel* *cell* power plant with humidified oxidant.

DETAILED DESCRIPTION - A *coolant* treatment system comprises an oxidant source for providing *fuel* *cell* power plant with oxidant, a *coolant* conduit through which an anti-freeze solution is exhausted from the *fuel* *cell* power plant, and a degasifying apparatus. The degasifying apparatus accepts the oxidant and the anti-freeze solution. The oxidant and the anti-freeze solution interacting with one another are treated in the degasifying apparatus by removing contaminants from the anti-freeze solution and by humidifying the oxidant. The degasifying apparatus provides the humidified oxidant to the *fuel* *cell* plant. The anti-freeze solution is connected with one of anode and cathode water transport plates. The *fuel* *cell* power plant has electrochemical *fuel* *cell* assemblies (11) electrically connecting each other. Each cell assemblies contains an electrolyte, the anode and the cathode. Each of the anode and the cathode support the anode and cathode water transport plates through which a fuel and the oxidant are fed to the anode and cathode, respectively. One of the transport plates supports *coolant* channels (78, 80) through which the anti-freeze solution is circulated. An INDEPENDENT CLAIM is also included for a method of providing a *coolant* treatment system.

USE - For *fuel* *cell* power plant.

ADVANTAGE - The system provides beneficial operating attributes to humidifying the inputted oxidant stream, maintaining the *fuel* *cell* assembly *coolant* system above its freezing point or quickly raising a cold or frozen *fuel* *cell* assembly above freezing, lessening the weight and volume of a temperature-protected *fuel* *cell* assembly or stack, and *cleansing* the *coolant* within the overall system to remove potentially harmful and debilitating contamination. All these contributes efficient operation of the *fuel* *cell* assembly and beneficial for motor vehicle manufacturing which demand high performance, reliability and low volume and weight.

DESCRIPTION OF DRAWING(S) - The figure is a simplified schematic illustration of a *coolant* treatment system.

Fuel *cell* assemblies (11)
Coolant channels (78, 80)
Demineralization device (140)
Degasifying apparatus (145)
Reservoir portion (149)
Degasifier portion (151)
pp; 37 DwgNo 2/3

Title Terms: *COOLANT*; TREAT; SYSTEM; FUEL; CELL; POWER; PLANT; DEGAS; APPARATUS; REMOVE; CONTAMINATE; ANTI; FREEZE; SOLUTION; HUMIDIFY; OXIDANT
Derwent Class: G04; X16
International Patent Class (Main): H01M-008/04
International Patent Class (Additional): H01M-008/10

20/7,DE/28 (Item 15 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013797465
WPI Acc No: 2001-281677/200129
Coolant for use in *fuel* *cell* cooling circuits contains base including water and rust preventative which keeps conductivity of *coolant* low and hydrogen ion exponent of *coolant* at approximately neutral
Patent Assignee: TOYOTA JIDOSHA KK (TOYT); NIPPON CHEM KOGYO KK (NIPC)
Inventor: KUROKAWA Y; NISHII M; SUGIYAMA S; TANIKAWA M; WATANABE H; YAEDA K
Number of Countries: 028 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200123495	A1	20010405	WO 2000JP6683	A	20000927	200129	B
JP 2001164244	A	20010619	JP 2000176464	A	20000613	200140	
EP 1262535	A1	20021204	EP 2000962904	A	20000927	200280	
			WO 2000JP6683	A	20000927		

Priority Applications (No Type Date): JP 2000176464 A 20000613; JP 99273813 A 19990928
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200123495	A1	J	35	C09K-005/10	
Designated States (National): CA US					
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
JP 2001164244	A		12	C09K-005/08	
EP 1262535	A1	E		C09K-005/10	Based on patent WO 200123495
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI					

Abstract (Basic): WO 200123495 A1
Abstract (Basic):

NOVELTY - *Coolant* contains a base including water and a rust preventative which keeps the conductivity of the *coolant* low and the hydrogen ion exponent of the *coolant* at approximately neutral.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(a) a method of sealing deoxygenated *coolant* in a *fuel* *cell* stack *coolant* circuit together with an inert gas;

(b) a *fuel* *cell* stack *coolant* system has a *coolant* circuit in which the *coolant* and inert gas are sealed; and

(c) a *purification* method of *coolant* by adjusting the base, adjusting the rust preventative and regenerating the deterioration material of the mixed liquid using an ion exchange resin or chelate resin.

USE - The *coolant* is used in *fuel* *cell* *coolant* circuits.

ADVANTAGE - The *coolant* for *fuel* *cells* has low conductivity, rust prevention properties, high heat transmission properties and ice-free properties.

DESCRIPTION OF DRAWING(S) - The drawing shows the laminate structure of units cells.

fuel *cell* (10)
stack (12)
unit cell (20)
air electrode (21)
fuel electrode (22)
electrolyte (23)
separator (24)
coolant separator (30)
outer *coolant* circuit (32)
coolant circuit (34)
pp; 35 DwgNo 5/6

Title Terms: *COOLANT*; FUEL; CELL; COOLING; CIRCUIT; CONTAIN; BASE; WATER; RUST; PREVENT; KEEP; CONDUCTING; *COOLANT*; LOW; HYDROGEN; ION; EXPONENT; *COOLANT*; APPROXIMATE; NEUTRAL
Derwent Class: E19; G04; L03; M14; Q75; X16
International Patent Class (Main): C09K-005/08; C09K-005/10
International Patent Class (Additional): C23F-011/10; F25D-009/00; H01M-008/02; H01M-008/04

20/7,DE/29 (Item 16 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013760749
WPI Acc No: 2001-244961/200125
Fuel *cell* plant, for use in vehicle, with stack of *fuel* *cells*, feed pipes and vaporizer, has pipe(s) from stack to other equipment using waste heat
Patent Assignee: SIEMENS AG (SIEI); EMITEC GMBH (EMIT-N); EMITEC GES EMISSIONSTECHNOLOGIE MBH (EMIT-N); BALDAUF M (BALD-I); BRUCK R (BRUC-I); GEBHARDT U (GEBH-I); GROSSE J (GROS-I); KONIECZNY J (KONI-I); LUFT G (LUFT-I); PANTEL K (PANT-I); PREIDEL W (PREI-I); REIZIG M (REIZ-I); WAIDHAS M (WAID-I)
Inventor: BALDAUF M; BRUECK R; GEBHARDT U; GROSSE J; KONIECZNY J; LUFT G; PANTEL K; PREIDEL W; REIZIG M; WAIDHAS M; BRUCK R
Number of Countries: 023 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200122512	A2	20010329	WO 2000DE3238	A	20000918	200125	B
DE 19945715	A1	20010405	DE 1045715	A	19990923	200126	
EP 1226617	A2	20020731	EP 2000978943	A	20000918	200257	
			WO 2000DE3238	A	20000918		

US 20020119352	A1	20020829	WO 2000DE3238	A	20000918	200259	
			US 2002105553	A	20020325		
JP 2003520392	W	20030702	WO 2000DE3238	A	20000918	200352	
			JP 2001525784	A	20000918		
CN 1421052	A	20030528	CN 2000816144	A	20000918	200357	

Priority Applications (No Type Date): DE 1045715 A 19990923
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200122512	A2	G	21	H01M-008/00	
Designated States (National): CA CN JP US					
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
DE 19945715	A1			H01M-008/02	
EP 1226617	A2	G		H01M-008/00	Based on patent WO 200122512
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					
US 20020119352	A1			H01M-008/04	Cont of application WO 2000DE3238
JP 2003520392	W		19	H01M-008/06	Based on patent WO 200122512
CN 1421052	A			H01M-008/04	

Abstract (Basic): WO 200122512 A2
Abstract (Basic):

NOVELTY - In a *fuel* *cell* plant having a stack of *fuel* *cells* , feed pipes for process medium, electrical connections and a vaporizer, there is at least one pipe allowing the heat from (part of) the *fuel* *cell* stack to be used in other equipment.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for operation of a *fuel* *cell* plant, in which the waste heat from (part of) a *fuel* *cell* stack is used.

USE - The plant is useful in vehicles.

ADVANTAGE - Using the (waste) heat increases the degree of efficiency.

DESCRIPTION OF DRAWING(S) - The drawing shows a block circuit diagram of the plant. (Drawing includes non-English language text).

Stack (1)
Vaporizer (2)
Compressor (3)
Heat exchanger (4)
Mixer (5)
Regulator (6)
Pump (7)
Methanol tank (8)
Water tank (9)
Water separator (10)
Gas purifier (11)
Preheater (12)
Pipe carrying spent fuel at about 160 degrees C (14)

Process medium feed pipes (21, 31)
pp; 21 DwgNo 1/2
Title Terms: FUEL; CELL; PLANT; VEHICLE; STACK; FUEL; CELL; FEED; PIPE; VAPORISE; PIPE; STACK; EQUIPMENT; WASTE; HEAT
Derwent Class: H06; L03; X16; X21
International Patent Class (Main): H01M-008/00; H01M-008/02; H01M-008/04; H01M-008/06
International Patent Class (Additional): H01M-008/10

20/7,DE/30 (Item 17 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013531581
WPI Acc No: 2001-015787/200102
Water treatment system for *fuel* *cell* assembly, has degasifier which enables oxidant to interact with *coolant* which circulates through *fuel* *cell* stack, so that contaminants within circulated *coolant* are removed
Patent Assignee: INT FUEL CELLS LLC (ITFU)
Inventor: GRASSO A P; VAN DINE L; VAN DINE L L
Number of Countries: 087 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200063994	A1	20001026	WO 2000US9786	A	20000412	200102	B
AU 200043434	A	20001102	AU 200043434	A	20000412	200107	
US 6207308	B1	20010327	US 99295732	A	19990420	200119	
DE 10084496	T	20020627	DE 1084496	A	20000412	200250	
			WO 2000US9786	A	20000412		
JP 2002542592	W	20021210	JP 2000613024	A	20000412	200301	
			WO 2000US9786	A	20000412		

Priority Applications (No Type Date): US 99295732 A 19990420
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200063994	A1	E	26	H01M-008/06	
AU 200043434	A			H01M-008/06	Based on patent WO 200063994
US 6207308	B1			H01M-008/04	
DE 10084496	T			H01M-008/06	Based on patent WO 200063994
JP 2002542592	W		42	H01M-008/04	Based on patent WO 200063994

Designated States (National): AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

Abstract (Basic): WO 200063994 A1

Abstract (Basic):

NOVELTY - A water treatment system has *fuel* *cell* assemblies. Anode and cathode of each assembly, support anode and cathode flow field plates through which fuel and oxidant are circulated to anode and cathode, respectively. A degasifier (45) enables the circulated *coolant* and oxidant to interact with each other, which are treated by removing contaminants from the *coolant* and humidifying the oxidant.

DETAILED DESCRIPTION - A water treatment system (100) has electrochemical *fuel* *cell* assemblies (11) which are electrically connected with each other. The anode and cathode of each assembly having an electrolyte, support anode and cathode flow field plates (18,17) through which fuel and oxidant are circulated to the anode and cathode, respectively. One of the flow field plate supports a *coolant* channel (21) having elemental exhaust manifold through which *coolant* is circulated. The circulated *coolant* is exhausted from *fuel* *cell* stack, by a *coolant* conduit (60). The oxidant is provided to the *fuel* *cell* stack by an oxidant source generator (47). A degasifier (45) enables the circulated *coolant* and oxidant to interact with each other which are treated by removing contaminants from the circulated *coolant*, and humidifying the oxidant. The treated *coolant* and oxidant are provided to the *fuel* *cell* stack by the degasifier.

An INDEPENDENT CLAIM is also included for the method which provides water treatment system to *fuel* *cell* stack.

USE - For *fuel* *cell* assembly.

ADVANTAGE - The water treatment system reduces the levels of contaminants in water circulating throughout *fuel* *cell* assembly. The efficiency of *fuel* *cell* assembly is improved by preventing the degradation of *fuel* *cell* material and decrease in conductivity of proton exchange membrane caused by shunt current corrosion. The damages caused to the functioning of *fuel* *cell* assembly are prevented by preventing contamination of water collected and circulated through the *fuel* *cell* assembly in the *coolant* channels.

DESCRIPTION OF DRAWING(S) - The figure shows the structure of water treatment system.

Fuel *cell* assembly (11)
Cathode and anode flow field plates (17,18)
Coolant channel (21)
Coolant pump (37)
Heat exchanger (39)
Demineralizer (40)
Degasifier (45)
Oxidant source generator (47)
Degasifier portion (51)
Coolant conduit (60)
Oxidant exit conduit (62)
Water treatment system (100)
pp; 26 DwgNo 4a/5

Title Terms: WATER; TREAT; SYSTEM; FUEL; CELL; ASSEMBLE; DEGAS; ENABLE; OXIDANT; INTERACT; *COOLANT*; CIRCULATE; THROUGH; FUEL; CELL; STACK; SO; CONTAMINATE; CIRCULATE; *COOLANT*; REMOVE
Derwent Class: D15; L03; X16
International Patent Class (Main): H01M-008/04; H01M-008/06
International Patent Class (Additional): H01M-008/10

20/7,DE/31 (Item 18 from file: 350)
DIALOG(R)File 350:Derwent WPIX

012745858
WPI Acc No: 1999-551975/199947
Fuel *cell* system comprises anode chamber and cathode chamber, which are separated by proton-conducting membrane, having improved efficiency
Patent Assignee: BALLARD POWER SYSTEMS INC (BALL-N); DBB FUEL CELL ENGINES GMBH (DBBF-N); XCELLSIS GMBH (XCEL-N)
Inventor: LAMM A; WIESHEU N
Number of Countries: 023 Number of Patents: 008
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 19807878	A1	19990826	DE 1007878	A	19980225	199947	B
WO 9944249	A1	19990902	WO 99CA135	A	19990224	199947	
AU 9925079	A	19990915	AU 9925079	A	19990224	200004	
EP 1060530	A1	20001220	EP 99904666	A	19990224	200105	
			WO 99CA135	A	19990224		
DE 19807878	C2	20011031	DE 1007878	A	19980225	200167	
JP 2002505507	W	20020219	WO 99CA135	A	19990224	200216	
			JP 2000533914	A	19990224		
EP 1060530	B1	20020605	EP 99904666	A	19990224	200238	
			WO 99CA135	A	19990224		
DE 69901688	E	20020711	DE 601688	A	19990224	200253	
			EP 99904666	A	19990224		
			WO 99CA135	A	19990224		

Priority Applications (No Type Date): DE 1007878 A 19980225
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 19807878	A1		6	H01M-008/04	
WO 9944249	A1	E		H01M-008/04	
Designated States (National): AU CA DE GB JP US					
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
AU 9925079	A			H01M-008/04	Based on patent WO 9944249
EP 1060530	A1	E		H01M-008/04	Based on patent WO 9944249
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					

DE 19807878 C2 H01M-008/04
JP 2002505507 W 18 H01M-008/04 Based on patent WO 9944249
EP 1060530 B1 E H01M-008/04 Based on patent WO 9944249
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
DE 69901688 E H01M-008/04 Based on patent EP 1060530
Based on patent WO 9944249

Abstract (Basic): DE 19807878 A1
Abstract (Basic):
NOVELTY - A *fuel* *cell* system has an anode chamber (12) and a cathode chamber (14) which are separated by a proton- conducting membrane (16). There is a cathode supply line (20) for oxygen-containing gas to the cathode chamber and an anode line for the supply of a liquid *coolant*/fuel mixture to the anode chamber. The anode chamber is located in an anode circuit comprising a radiator 946), a gas separator (52) and a pump (34). There is a subdivision of the anode circuit into a circulating circuit and a cooling circuit. The latter joins an anode drain line (22) to the anode supply line and has a gas separator with a *radiator* in the *flow* direction. The circulating circuit is designed as the bypass line 930) connecting the drain line and the gas separator.
USE - None given
ADVANTAGE - Simple compact system with a shorter heating- up phase, improved cooling function of the anode circuit and increased separating rate of fuel and *coolant* from the hot anode gas.
pp; 6 DwgNo 1/1
Title Terms: FUEL; CELL; SYSTEM; COMPRISE; ANODE; CHAMBER; CATHODE; CHAMBER ; SEPARATE; PROTON; CONDUCTING; MEMBRANE; IMPROVE; EFFICIENCY
Derwent Class: X16
International Patent Class (Main): H01M-008/04
International Patent Class (Additional): H01M-008/06; H01M-008/10

20/7,DE/32 (Item 19 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011881116
WPI Acc No: 1998-298026/199826
Engine cooling system. - uses anhydrous liquid *coolant* contained in sealed cooling system.
Patent Assignee: EVANS COOLING SYSTEMS INC (EVAN-N)
Inventor: EVANS J W
Number of Countries: 079 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9821455	A1	19980522	WO 97US21191	A	19971112	199826	B

AU 9854482	A	19980603	AU 9854482	A	19971112	199842	
US 6101988	A	20000815	US 96747634	A	19961113	200041	

Priority Applications (No Type Date): US 96747634 A 19961113
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9821455	A1	E	62	F01P-003/22	

Designated States (National): AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW
Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GH GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW

AU 9854482	A	F01P-003/22	Based on patent WO 9821455
US 6101988	A	F01P-011/20	

Abstract (Basic): WO 9821455 A

The engine (10) has a cylinder block *coolant* jacket (22) and a cylinder head (26) which incorporates a head *coolant* jacket (30). The cylinder head and block *coolant* jackets are inter-connected. The cooling jacket inlet (64) and outlet (38) ports are connected to the radiator (54) and heater (68) systems. The radiator is cooled by electric fan (56) which is controlled by thermostatic switch (60). During engine warm up when the *coolant* temperature is relatively low, the *coolant* is directed through the radiator bypass line by PVT48. When the temperature increases PVT48 directs the *coolant* through the *radiator* where it is cooled by the fan. The cooling system is hermetically sealed and when the internal pressure of the system increases, hot liquid is expands via vent port (72) and vent line (74) into accumulator (78).

USE - The system is used for cooling power generating equipment such as engines or *fuel* *cells*.

ADVANTAGE - The sealed cooling system uses non-aqueous *coolant* and operates at lower pressure than conventional systems so giving improved reliability. The sealed system also eliminates moisture contamination of the *coolant*.

Dwg.1/6

Title Terms: ENGINE; COOLING; SYSTEM; ANHYDROUS; LIQUID; *COOLANT*; CONTAIN ; SEAL; COOLING; SYSTEM
Derwent Class: Q51
International Patent Class (Main): F01P-003/22; F01P-011/20

20/7,DE/33 (Item 20 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011363647

WPI Acc No: 1997-341554/199731
Motor vehicle with tubular chassis members used to carry fluids - has engine mounted directly on one end of chassis and connected to tubular members by seals, tubular members having inner *cells* used as *fuel* tank, *coolant* fluid *radiator* or reservoir for circulating engine oil
Patent Assignee: SBARRO F (SBAR-I)
Inventor: SBARRO F
Number of Countries: 020 Number of Patents: 007
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9722509	A1	19970626	WO 96CH445	A	19961218	199731	B
FR 2742403	A1	19970620	FR 9515798	A	19951218	199732	
EP 868338	A1	19981007	EP 96940977	A	19961218	199844	
			WO 96CH445	A	19961218		
EP 868338	B1	19990616	EP 96940977	A	19961218	199928	
			WO 96CH445	A	19961218		
DE 69602973	E	19990722	DE 602973	A	19961218	199935	
			EP 96940977	A	19961218		
			WO 96CH445	A	19961218		
ES 2134650	T3	19991001	EP 96940977	A	19961218	199948	
JP 2000501677	W	20000215	WO 96CH445	A	19961218	200019	
			JP 97522390	A	19961218		

Priority Applications (No Type Date): FR 9515798 A 19951218
Cited Patents: 1.Jnl.Ref; DE 4032433; DE 4243455; DE 4322717; DE 737775; DE 739937; GB 813442; JP 61054325; US 1343682
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9722509	A1	F	21	B62D-021/04	
Designated States (National): JP US					
Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
JP 2000501677	W		14	B62D-021/04	Based on patent WO 9722509
EP 868338	A1	F		B62D-021/04	Based on patent WO 9722509
Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					
EP 868338	B1	F		B62D-021/04	Based on patent WO 9722509
Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					
DE 69602973	E			B62D-021/04	Based on patent EP 868338 Based on patent WO 9722509
ES 2134650	T3			B62D-021/04	Based on patent EP 868338
FR 2742403	A1			B62D-021/04	

Abstract (Basic): WO 9722509 A
The vehicle has a chassis (10) which has at least one tubular member in the form of a light alloy extrusion with inner lengthwise cells. At least some of the cells are used to transport fluids

necessary for the vehicle's operation. It also has front and rear suspension units (15) which are connected to the chassis.

At least one of the tubular chassis member cells is used as a fuel tank, which can be twin-walled, while others act as a *coolant* fluid *radiator* and a reservoir for circulating engine oil. The seals between the engine an chassis can incorporate valves with control elements such as thermostats, electrical, hydraulic or pneumatic actuators.

ADVANTAGE - Improved use of vehicle chassis for supplementary functions.

Dwg.1/4

Title Terms: MOTOR; VEHICLE; TUBE; CHASSIS; MEMBER; CARRY; FLUID; ENGINE; MOUNT; ONE; END; CHASSIS; CONNECT; TUBE; MEMBER; SEAL; TUBE; MEMBER; INNER; CELL; FUEL; TANK; *COOLANT*; FLUID; RADIATOR; RESERVOIR; CIRCULATE ; ENGINE; OIL

Derwent Class: Q22

International Patent Class (Main): B62D-021/04

International Patent Class (Additional): B62D-021/16; B62D-021/17

20/7,DE/34 (Item 21 from file: 350)

DIALOG(R)File 350:Derwent WPIX

011074738

WPI Acc No: 1997-052662/199705

Temp. regulating system for *fuel* *cell* powered electric vehicle - comprises *fuel* *cell* stack with *coolant* paths, fan and radiator, by-pass pump for cabin heating and resistor for heating cooling medium using electric power derived from regenerative braking

Patent Assignee: BALLARD POWER SYSTEMS INC (BALL-N); DBB FUEL CELL ENGINES GMBH (DBBF-N); XCELLISS FUEL CELL ENGINES INC (XCEL-N)

Inventor: GORBELL B N; MUFFORD E W; STRASKY D G; MUFFORD W E

Number of Countries: 021 Number of Patents: 007

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9641393	A1	19961219	WO 96CA351	A	19960529	199705	B
AU 9658072	A	19961230	AU 9658072	A	19960529	199716	
EP 842548	A1	19980520	EP 96919504	A	19960529	199824	
			WO 96CA351	A	19960529		
EP 842548	B1	19990804	EP 96919504	A	19960529	199935	
			WO 96CA351	A	19960529		
DE 69603608	E	19990909	DE 603608	A	19960529	199943	
			EP 96919504	A	19960529		
			WO 96CA351	A	19960529		
DE 29623879	U1	20000504	DE 96U2023879	U	19960529	200029	
			DE 603608	A	19960529		
US 6186254	B1	20010213	WO 96CA351	A	19960529	200111	

US 98973278 A 19980212

Priority Applications (No Type Date): US 95473248 A 19950607; US 98973278 A 19980212
Cited Patents: 4.Jnl.Ref; JP 4043568; JP 60041767; JP 61085775; JP 62198058; US 3507702; US 5193635; US 5316870; US 5366821; US 5409784; WO 9410716
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9641393	A1	E	33	H01M-008/04	
Designated States (National): AU CA JP US					
Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
AU 9658072	A			H01M-008/04	Based on patent WO 9641393
EP 842548	A1	E		H01M-008/04	Based on patent WO 9641393
Designated States (Regional): DE FR GB IT					
EP 842548	B1	E		H01M-008/04	Based on patent WO 9641393
Designated States (Regional): DE FR GB IT					
DE 69603608	E			H01M-008/04	Based on patent EP 842548 Based on patent WO 9641393
DE 29623879	U1			H01M-008/04	Application no. DE 603608
US 6186254	B1			B60K-001/00	Based on patent WO 9641393

Abstract (Basic): WO 9641393 A

The temperature regulating system includes an electric motor (15) for driving wheels (20) of the vehicle which is powered from the *fuel* *cell* stack (30) e.g. via a DC-DC booster or DC-AC inverter (40). At least one conduit external to the *fuel* *cell* stack defines a *coolant* medium path (55) from at least one *coolant* outlet port to at least one *coolant* inlet port of the *fuel* *cell* stack.

The resistor (70) in a sealed resistor housing (75) having a *coolant* inlet and outlet, is in communication with the cooling medium for heating it. The resistor is connected to a source of power such as electric power comprising regenerative electrical power derived from regenerative braking of the vehicle, shore electric power and *fuel* *cell* stack generated electric power. A cooling pump and radiator and disposed in the *coolant* path, with a fan generating air *flow* over the *radiator*. Hydrogen and air supply systems are included for generating electric power in the *fuel* *cell* stack.

ADVANTAGE - Helps maintain temp. of *fuel* *cell* stack within range for satisfactory cell performance. Resistor acts as bleed resistor at shut down by consuming reactants remaining in *fuel* *cell* stack to lower stack voltage and leave it in electrically safe state.

Dwg.1/4

Title Terms: TEMPERATURE; REGULATE; SYSTEM; FUEL; CELL; POWER; ELECTRIC; VEHICLE; COMPRISE; FUEL; CELL; STACK; *COOLANT*; PATH; FAN; RADIATOR; BY-PASS; PUMP; CABIN; HEAT; RESISTOR; HEAT; COOLING; MEDIUM; ELECTRIC; POWER; DERIVATIVE; REGENERATE; BRAKE
Derwent Class: Q13; Q14; X16; X21

International Patent Class (Main): B60K-001/00; H01M-008/04
International Patent Class (Additional): B60K-001/04; B60L-011/18

20/7,DE/35 (Item 22 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007344618
WPI Acc No: 1987-341624/198748
Fuel *cell* *coolant* inlet manifold system - in which water is fed from top of manifold and which includes bleed for cleaning at the bottom of manifold
Patent Assignee: INT FUEL CELLS CORP (ITFU)
Inventor: ABRAMS M L; TAYLOR W A
Number of Countries: 011 Number of Patents: 007
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4706737	A	19871117	US 86932849	A	19861120	198748	B
EP 274032	A	19880713	EP 87117114	A	19871119	198828	
JP 63264877	A	19881101	JP 87293046	A	19871119	198849	
CA 1305749	C	19920728	CA 552193	A	19871119	199236	
EP 274032	B1	19921223	EP 87117114	A	19871119	199252	
DE 3783227	G	19930204	DE 3783227	A	19871119	199306	
			EP 87117114	A	19871119		
ES 2038155	T3	19930716	EP 87117114	A	19871119	199333	

Priority Applications (No Type Date): US 86932849 A 19861120
Cited Patents: 1.Jnl.Ref; GB 2151840; JP 61173467; US 2191909; US 3168138; US 3969145; US 4310605; WO 8504287
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4706737	A		10		
EP 274032	A	E			
Designated States (Regional): BE DE ES FR GB IT NL SE					
EP 274032	B1	E	12	H01M-008/04	
Designated States (Regional): BE DE ES FR GB IT NL SE					
DE 3783227	G			H01M-008/04	Based on patent EP 274032
ES 2038155	T3			H01M-008/04	Based on patent EP 274032
CA 1305749	C			H01M-008/04	

Abstract (Basic): US 4706737 A
Water cooling system for an electrochemical cell stack comprises: a cell stack (102) contg. interspersed cooling plates; a water *coolant* inlet manifold (104) on one side of the stack with snivvies (110) to each cooling plate; a water inlet (105) at the top of the manifold; a bleed snivvy (109) at the bottom of the manifold below the lowest of the feed snivvies (110) so that corrosion particles etc. will settle in

it for removal; a bleed conduit leading from the bleed snivvy for removal of corrosion particles; and means for returing the *cleansed* bleed *stream* to the main cooling stream.

ADVANTAGE - Constriction of the snivvies by Fe oxide and Cu corrosion prods. in more uniformly distributed on the inlet side so that service life between shutdowns for conduit cleaning is extended.

4

Abstract (Equivalent): EP 274032 B

An electrochemical cell cooling system of the type which uses a water *coolant*, said system comprising: (a) a stack (102) of electrochemical cells to be cooled, said stack including a plurality of cooling plates interspersed therethrough; (b) a water *coolant* inlet manifold (104) disposed on one side of said stack, said inlet manifold having a top end and a bottom end and a plurality of *coolant* feed ports (108) extending from said inlet manifold to said cooling plates for feeding *coolant* from said inlet manifold to each of said cooling plates; (c) a water *coolant* inlet conduit (106) operably connected to said inlet manifold (104) for admitting *coolant* water to said inlet manifold via said top end of said inlet manifold; (d) a *coolant* bleed port (109) disposed at said bottom end of said inlet manifold (104) below a lowermost of said *coolant* feed ports (108), said bleed port being thus positioned to be in a zone of said inlet manifold into which corrosion product particles will settle in said inlet manifold, and said bleed port providing a constantly open passage through which settling corrosion product particles will exit from said inlet manifold; (e) a bleed conduit (113) operably connected to said bleed port (109) to duct corrosion product particles from said inlet manifold (104) to a polisher (115) wherein said particles will be removed from said water *coolant*; and (f) means (117) for returning said water *coolant* to a main stream of said cooling system after treatment in said polisher. (Dwg.4/5)

Title Terms: FUEL; CELL; *COOLANT*; INLET; MANIFOLD; SYSTEM; WATER; FEED; TOP; MANIFOLD; BLEED; CLEAN; BOTTOM; MANIFOLD

Derwent Class: L03; Q78; X16

International Patent Class (Main): H01M-008/04

International Patent Class (Additional): F28F-019/00; H01M-008/12; H01M-008/24

? t s21/ti/all

21/TI/1 (Item 1 from file: 6)

DIALOG(R)File 6:(c) 2004 NTIS, Intl Cpyrght All Rights Res. All rts. reserv.

Task 3.9 -- Catalytic tar cracking. Semi-annual report, January 1--June 30, 1995

(PROGRESS REPT)

21/TI/2 (Item 2 from file: 6)
DIALOG(R)File 6:(c) 2004 NTIS, Intl Cpyrght All Rights Res. All rts. reserv.

Energy and environmental research emphasizing low-rank coal: Task 3.9 catalytic tar cracking

21/TI/3 (Item 3 from file: 6)
DIALOG(R)File 6:(c) 2004 NTIS, Intl Cpyrght All Rights Res. All rts. reserv.

Physical Gas Stream Cleanup: Technology Status Report

21/TI/4 (Item 4 from file: 6)
DIALOG(R)File 6:(c) 2004 NTIS, Intl Cpyrght All Rights Res. All rts. reserv.

Purification of Hydrogen Gas Streams
(Final technical rept. 19 Aug 85-18 May 86)

21/TI/5 (Item 1 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Task 3.9 -- Catalytic tar cracking. Semi-annual report, January 1--June 30, 1995

21/TI/6 (Item 2 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Electrode production method and system of *fuel* *cell*
Original Title: Nenryo denchi no denkyoku sakusei hoho oyobi sochi

21/TI/7 (Item 3 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Energy and environmental research emphasizing low-rank coal: Task 3.9 catalytic tar cracking

21/TI/8 (Item 4 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Fluidized-bed filter for particulate cleanup
Title: Proceedings of the ninth annual coal-fueled heat engines, advanced pressurized fluidized-bed combustion (PFBC), and gas stream cleanup systems contractors review meeting

21/TI/9 (Item 5 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Physical gas stream cleanup: Technology status report

21/TI/10 (Item 6 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Process for ammonia syngas manufacture

21/TI/11 (Item 7 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Low-temperature *fuel* *cell* containing an alkaline electrolyte (Patent^ CO/sub 2/ removal from electrolyte by *circulation* through *purifier*)

21/TI/12 (Item 8 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: *Fuel* *cell* (Patent^ electrolyte *purification* and *circulation* system, air cleaning system, and H/sub 2/ feed control)

21/TI/13 (Item 1 from file: 315)
DIALOG(R)File 315:(c) 2004 DECHEMA. All rts. reserv.

Title: Removal of hydrogen sulfide from a fuel gas stream by electrochemical membrane separation
Orig. Title: Entfernung von Schwefelwasserstoff aus einem Brenngasstrom durch elektrochemische Membrantrennung

21/TI/14 (Item 2 from file: 315)
DIALOG(R)File 315:(c) 2004 DECHEMA. All rts. reserv.

Title: Cheaper ionomer membranes.

21/TI/15 (Item 1 from file: 347)
DIALOG(R)File 347:(c) 2004 JPO & JAPIO. All rts. reserv.

SEMICONDUCTOR MANUFACTURING SYSTEM

21/TI/16 (Item 2 from file: 347)
DIALOG(R)File 347:(c) 2004 JPO & JAPIO. All rts. reserv.

HIGH TEMPERATURE FILTERING DEVICE FOR COOLING WATER OF *FUEL* *CELL*

21/TI/17 (Item 3 from file: 347)
DIALOG(R)File 347:(c) 2004 JPO & JAPIO. All rts. reserv.

HIGH TEMPERATURE FILTER FOR COOLING WATER OF *FUEL* *CELL*

21/TI/18 (Item 1 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Fuel *cell* system having valve gear, includes filter arranged at one side of branch flow path, so that foreign material currently contained in gas is captured

21/TI/19 (Item 2 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Producing hydrogen for use in *fuel* *cells* comprises obtaining a metabolic source for producing hydrogen by a microalga and producing hydrogen using bacteria having a photosynthesis ability

21/TI/20 (Item 3 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Fuel filter assembly for fuel injector, includes retainer tube in which filter element made of thermoplastic is provided to *filter* fuel *flowing* through fuel tube

21/TI/21 (Item 4 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Pulse gasification system for producing gas stream having fuel or heat value, comprises fluid channel having first and second stage sections,

pulse combustion device, sulfur capturing agent injection port, and particulate removal device

21/TI/22 (Item 5 from file: 350)

Hydrogen purification device comprises hydrogen-selective membrane(s) including first surface to be contacted by mixed gas stream and permeate surface formed from portion of mixed gas stream that passes through membrane

21/TI/23 (Item 6 from file: 350)

Electrochemical aluminum-water hydrogen storing and producing method and equipment

21/TI/24 (Item 7 from file: 350)

Removal of by-product from chemical hydride solution involves cooling solution withdrawn from reactor, removing the precipitate and delivering the heated chemical hydride solution back to the reactor

21/TI/25 (Item 8 from file: 350)

Filter system for adsorbing contaminants from molten carbonate *fuel* *cell* exhaust *stream*, has *filter* substrate coated with material comprising inorganic adsorbent secured to the substrate by inorganic binder, and acidic material

21/TI/26 (Item 9 from file: 350)

Gas generation system for, e.g. *fuel*-*cell*-powered motor vehicle, includes reformer, shift stage, and cooler with coating

21/TI/27 (Item 10 from file: 350)

Fueling apparatus for fueling polymer electrolyte membrane *fuel* *cells*

, comprising at least two fuel bearing containers placed in proximity to each other

21/TI/28 (Item 11 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Coal gasification *fuel* *cell* composite power generating plant has *fuel* *cell* governor and by-pass line governor, to control *flow* amount of *purified* gas in respective flow paths

21/TI/29 (Item 12 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Fuel reformer, for *fuel* *cell*, has flow control valve in hydrogen gas supply line, to limit *flow* of *purified* gas to stack when hydrocarbon concentration in purified gas is higher than predetermined value

21/TI/30 (Item 13 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Fuel *cell* system passes water through bypass flowpath based on differential pressure of ion removal filter

21/TI/31 (Item 14 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Hydrogen station, for *fuel* *cell* powered vehicle, has switching equipment that changes *flow* direction of *purified* hydrogen for storage into pressure vessel or for re-purification by purifier

21/TI/32 (Item 15 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Water purifier for lakes, marshes, has floating structure installed with *fuel* *cell* to drive pump for *circulating* water through *filter*

21/TI/33 (Item 16 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Bath water *circulation* and *purification* system has electrolytic sterilization device which supplies hydrogen gas, oxygen gas formed at electrodes to *fuel* *cell*

21/TI/34 (Item 17 from file: 350)

Fuel processor for producing hydrogen gas, comprises shell, hydrogen-producing region and separation region that separates mixed gas stream into hydrogen-rich stream forming hydrogen stream and byproduct stream

21/TI/35 (Item 18 from file: 350)

Power generation device comprises hydrogen generator, polyelectrolyte *fuel* *cell*, combustor for heating reformer and flow rate controller for controlling supply amount of combustion fuel

21/TI/36 (Item 19 from file: 350)

Multi-stage unit for selective catalytic oxidation of carbon monoxide hydrogen-rich gas *stream*, for *purifying* reformate in *fuel* *cell* -operated vehicle, has two oxidation stages with common cooling cycle and third cooled by reformer

21/TI/37 (Item 20 from file: 350)

Production of hydrogen with carbon mono- and dioxide below minimum level, includes receiving a feedstock and delivering it to a catalyst bed, passing the product *stream* to a *purification* module and through a polishing catalyst bed

21/TI/38 (Item 21 from file: 350)

Segmented metal hydride hydrogen gas storage system e.g. metal hydride batteries, comprises hermetically sealed containment can, electrochemical device, hydrogen storage chamber and a dual one way check valve

21/TI/39 (Item 22 from file: 350)

Purification of a hydrogen stream involves applying voltage across a cell membrane assembly supplied with hydrogen, which are oxidized to form protons that are moved across the membrane and recombined to form recombined hydrogen

21/TI/40 (Item 23 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Air filter system for intake streams of gas turbines

21/TI/41 (Item 24 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Hydrogen production for *fuel* *cells* in cars, buses and industrial plants

21/TI/42 (Item 25 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Production of electrical energy from hydrogen-rich crude gas

21/TI/43 (Item 26 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Autonomous breathing gas production, treatment and supply to a diver

21/TI/44 (Item 27 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Purification of gas *stream* containing hydrogen and carbon monoxide

21/TI/45 (Item 28 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Producing porous metal with uniform pore size - by reducing mixture of metal, solvent and structure-directing agent in amount sufficient to form liquid crystalline phase in the mixture

21/TI/46 (Item 29 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Membrane separation, used in water treatment and electrodialysis - involving a charged membrane having ultra-low pressure ion-rejection properties and good electrochemical separator properties and long-term stability

21/TI/47 (Item 30 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Small scale *fuel* *cell* power generation system - comprises ceramic plug containing platinum to heat fuel air mixture before entering ceramic *fuel* *cell*

21/TI/48 (Item 31 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Water treatment for *fuel* *cell* - involves filtering only when suspended solids density exceeds set valve

21/TI/49 (Item 32 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Improved ammonia syngas prodn. by reforming hydrocarbon(s) - eliminating prior process by means of pressure swing adsorption unit and *fuel* *cell*

? t s21/7,de/16,18,20,21,24,25,30,32,33,37,48

21/7,DE/16 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

01974765
HIGH TEMPERATURE FILTERING DEVICE FOR COOLING WATER OF *FUEL* *CELL*

PUB. NO.: 61-188865 [JP 61188865 A]
PUBLISHED: August 22, 1986 (19860822)
INVENTOR(s): KANEKO MASAO
KAWACHI KYOZO
APPLICANT(s): TOSHIBA CORP [000307] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 60-028473 [JP 8528473]
FILED: February 18, 1985 (19850218)
JAPIO CLASS: 42.9 (ELECTRONICS -- Other); 13.1 (INORGANIC CHEMISTRY -- Processing Operations); 35.0 (NEW ENERGY SOURCES -- General)

ABSTRACT

PURPOSE: To reduce heat loss by processing at low temperature, unprocessed water in which heavy metal elements are condensed, through an ion exchanger resin.

CONSTITUTION: A circulation system is composed such that cooling water from a steam/liquid separator 3 is firstly compressed by a pump 5 and *flows* through a *filter* 21 from its inlet 22, and heavy metal elements are adsorbed and/or filtrated with a filter medium 28, the water flows out from the cooling water outlet 23, and is sent into the cooling tube 2 in the reactor 1 through an open- close valve 24, cools the inside of a reactor 1 and then goes back to the separator 3. A part of the cooling water that *flows* into the *filter* 21 goes out without adsorption/filtration of heavy metal elements from the unprocessed water outlet 25, and is cooled down in a heat exchanger 9 and then processed at low temperature through an ion exchanger resin tower 10. In this case, unprocessed water flows along the surface of the filter medium 28 of the filter 21, washes away a part of copper and iron adsorbed on and near the surface of the *filter* medium, and *flows* out. Thereby copper and iron are condensed from the water before entering the filter 21.

21/7,DE/18 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016105973
WPI Acc No: 2004-263849/200425
Fuel *cell* system having valve gear, includes filter arranged at one side of branch flow path, so that foreign material currently contained in gas is captured
Patent Assignee: AISIN SEIKI KK (AISE)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2004103505	A	20040402	JP 2002266963	A	20020912	200425 B

Priority Applications (No Type Date): JP 2002266963 A 20020912
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2004103505	A		12	H01M-008/04	

Abstract (Basic): JP 2004103505 A
Abstract (Basic):
NOVELTY - The gas passes through a branch flow path (17) from one of a fuel off-gas flow path, a heating gas supply flow path and the oxidizing agent gas *flow* path. The *filter* (7) is arranged at one

side of the branch flow path, so that the foreign material currently contained in gas is captured and the *flow* of *filtered* gas is started.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for valve gear.

USE - *Fuel* *cell* system with valve gear (claimed).

ADVANTAGE - Deposition of the foreign material in the valve opening of a valve gear is suppressed. The capture effect of the filter is maintained reliably.

DESCRIPTION OF DRAWING(S) - The figure shows a sectional view of the *fuel* *cell* system.

filter (7)
branch flow path (17)
valve opening (51)
cylinder (52)
valve unit (54)
pp; 12 DwgNo 2/8

Title Terms: FUEL; CELL; SYSTEM; VALVE; GEAR; FILTER; ARRANGE; ONE; SIDE; BRANCH; FLOW; PATH; SO; FOREIGN; MATERIAL; CURRENT; CONTAIN; GAS; CAPTURE
Derwent Class: Q66; X16
International Patent Class (Main): H01M-008/04
International Patent Class (Additional): F16K-051/00

21/7,DE/20 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015939870
WPI Acc No: 2004-097711/200410
Fuel filter assembly for fuel injector, includes retainer tube in which filter element made of thermoplastic is provided to *filter* fuel *flowing* through fuel tube
Patent Assignee: RAO A M (RAOA-I)
Inventor: RAO A M
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20030230648	A1	20031218	US 2002171524	A	20020612	200410	B

Priority Applications (No Type Date): US 2002171524 A 20020612
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030230648	A1		6	B05B-001/30	

Abstract (Basic): US 20030230648 A1
Abstract (Basic):
NOVELTY - The assembly has a calibration ring (60) to position a

filter retainer tube (58) in a fuel tube (14). The retainer tube has a filter element (56) made of thermoplastic to *filter* fuel *flowing* through the fuel tube.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) fuel injector; and

(2) fuel filter element.

USE - Fuel filter assembly for fuel injector (claimed) used in internal combustion engine and *fuel* *cell*.

ADVANTAGE - The filter element made of suitable thermoplastic is selected. The length and diameter of the filter element are reduced, thereby reducing the size and cost of the fuel injector.

DESCRIPTION OF DRAWING(S) - The figure shows a partial sectional view of the fuel injector.

fuel injector (10')

fuel tube (14)

filter element (56)

filter retainer tube (58)

calibration ring (60)

pp; 6 DwgNo 3/5

Title Terms: FUEL; FILTER; ASSEMBLE; FUEL; INJECTOR; RETAIN; TUBE; FILTER; ELEMENT; MADE; THERMOPLASTIC; FILTER; FUEL; FLOW; THROUGH; FUEL; TUBE

Derwent Class: A13; A14; A28; A32; A88; L03; P42; X16

International Patent Class (Main): B05B-001/30

21/7,DE/21 (Item 4 from file: 350)

DIALOG(R)File 350:Derwent WPIX

015877278

WPI Acc No: 2004-035111/200403

Pulse gasification system for producing gas stream having fuel or heat value, comprises fluid channel having first and second stage sections, pulse combustion device, sulfur capturing agent injection port, and particulate removal device

Patent Assignee: MFG & TECHNOLOGY CONVERSION INT INC (TECH-N)

Inventor: CHANDRAN R; MANSOUR M N

Number of Countries: 103 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200399965	A2	20031204	WO 2003US16428	A	20030522	200403	B
US 20040031450	A1	20040219	US 2002382302	P	20020522	200414	
			US 2003445289	A	20030522		

Priority Applications (No Type Date): US 2002382302 P 20020522; US 2003445289 A 20030522

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes
WO 200399965 A2 E 43 C10J-000/00
Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PH PL PT RO RU SC SD SE SG SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW
US 20040031450 A1 F22B-031/00 Provisional application US 2002382302

Abstract (Basic): WO 200399965 A2
Abstract (Basic):

NOVELTY - A pulse gasification system comprises a fluid channel having first and second stage sections, a pulse combustion device in communication with the first stage section of the fluid channel, a sulfur capturing agent injection port for injecting a sulfur capturing agent into the second stage section, and a particulate removal device in communication with the fluid channel for receiving the combustion stream and removing particulates contained in the stream.

DETAILED DESCRIPTION - A pulse gasification system comprises a fluid channel having first and second stage sections, a pulse combustion device in communication with the first stage section of the fluid channel, a sulfur capturing agent injection port for injecting a sulfur capturing agent into the second stage section, and a particulate removal device in communication with the fluid channel for receiving the combustion stream and removing particulates contained in the stream. The fluid channel has a U-shaped section that transitions the first stage section to the second stage section. The combustion device includes a pulse combustor coupled to resonance tube(s). It is configured to combust solid or liquid fuel, and to create a pulsating combustion stream and acoustic pressure wave. The sulfur-capturing agent is configured to remove the sulfur-containing gases from pulsating combustion stream and to undergo acoustic agglomeration with any particles contained in the pulsating combustion stream.

An INDEPENDENT CLAIM is also included for producing a gas stream having fuel or heat value comprising combusting a solid or liquid fuel in pulse combustion device and creating combustion stream and acoustic pressure wave, communicating the pulsating combustion stream and acoustic pressure wave through a fluid channel, injecting a sulfur capturing agent into the fluid channel, and *filtering* the combustion *stream* to remove agglomerated particles.

USE - Used for producing a gas stream having fuel or heat value (claimed). It is configured for combined heat and power application, hydrogen production, direct reduction of iron, or production of liquid fuels.

ADVANTAGE - The system eliminates stage(s) of barrier filtration

for hot gas particulate cleanup, thus enhances reliability, plant availability, reduces capital, operating and maintenance cost, and requires less real state. It improves performance, reduces waste, increases revenues, enhances economics, improves process efficiency, and lowers net heat rate.

DESCRIPTION OF DRAWING(S) - The figure is an exemplary block flow diagram of the pulse gasification system.

pp; 43 DwgNo 1/8

Title Terms: PULSE; GASIFICATION; SYSTEM; PRODUCE; GAS; STREAM; FUEL; HEAT; VALUE; COMPRISE; FLUID; CHANNEL; FIRST; SECOND; STAGE; SECTION; PULSE; COMBUST; DEVICE; SULPHUR; CAPTURE; AGENT; INJECTION; PORT; PARTICLE; REMOVE; DEVICE

Derwent Class: H09; Q52; Q72

International Patent Class (Main): C10J-000/00; F22B-031/00

International Patent Class (Additional): F02B-045/06

21/7,DE/24 (Item 7 from file: 350)

DIALOG(R)File 350:Derwent WPIX

015554872

WPI Acc No: 2003-617027/200358

Removal of by-product from chemical hydride solution involves cooling solution withdrawn from reactor, removing the precipitate and delivering the heated chemical hydride solution back to the reactor

Patent Assignee: HYDROGENICS CORP (HYDR-N); MAZZA A G (MAZZ-I); RUSTA-SALLEHY A (RUST-I)

Inventor: MAZZA A G; RUSTA-SALLEHY A

Number of Countries: 100 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20030118504	A1	20030626	US 200124539	A	20011221	200358	B
WO 200355796	A1	20030710	WO 2002CA1960	A	20021218	200358	
AU 2002351590	A1	20030715	AU 2002351590	A	20021218	200421	

Priority Applications (No Type Date): US 200124539 A 20011221

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030118504	A1		10	C01B-006/34	
WO 200355796	A1	E		C01B-003/06	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SI SK SL SZ TR TZ UG ZM

ZW
AU 2002351590 A1 C01B-003/06 Based on patent WO 200355796

Abstract (Basic): US 20030118504 A1
Abstract (Basic):

NOVELTY - A by-product from a chemical hydride solution is removed by withdrawing the chemical hydride solution from the reactor, cooling the solution, removing the precipitate, heating the solution and delivering the chemical hydride solution back to the reactor.

DETAILED DESCRIPTION - Removal of a by-product from a chemical hydride solution includes:

(i) withdrawing a portion of the chemical hydride solution at a first temperature from the reactor;

(ii) cooling the portion of the chemical hydride solution to a second temperature below the first temperature, where a precipitate is formed from a portion of the by-product;

(iii) removing a portion of the precipitate from the portion of the chemical hydride solution;

(iv) heating the portion of the chemical hydride solution to a third temperature above the second temperature, where a remaining portion of the precipitate is dissolved in the portion of the chemical hydride solution; and

(v) delivering the portion of the chemical hydride solution back to the reactor.

The by-product is produced in the reactor configured to contact the chemical hydride solution with a catalyst.

An INDEPENDENT CLAIM is also included for a system for removing a by-product from a chemical hydride solution, comprising a circuit. The circuit includes:

(a) a reactor (112) having a catalyst for catalyzing the reaction of the chemical hydride solution to generate hydrogen;

(b) a pump (132) for withdrawing the portion of the chemical hydride solution at the first temperature from the reactor and returning the portion of the chemical hydride solution to the reactor;

(c) a cooling element for cooling the portion of the chemical hydride solution to the second temperature below the first temperature;

(d) a separator (164) for removing the portion of the precipitate from the portion of the chemical hydride solution; and

(e) a heater for heating the portion of the chemical hydride solution to a third temperature above the second temperature.

The remaining portion of the precipitate is dissolved in the portion of the chemical hydride solution. The cooling element is located in the circuit downstream of the reactor. The separator is located in the circuit downstream of the cooling element. The heater is located in the circuit downstream from the separator.

USE - Removing a by-product from a chemical hydride solution, especially for hydrogen generation in a *fuel* *cell*.

ADVANTAGE - The process reduces build-up of by-product in the

chemical hydride solution. It is capable of responding in real time to the fuel (hydrogen) needs of a *fuel* *cell*. It maintains the by-product concentration below the by-product solubility limit.

DESCRIPTION OF DRAWING(S) - The figure is a schematic flow diagram of a *fuel* *cell* system comprising a chemical hydride hydrogen generation system and a by-product removal system.

Reactor (112)
Pump (132)
Radiator (142)
Cooling fan (144)
Control unit (146)
Heat exchanger (154)
Separator (164)
pp; 10 DwgNo 1/2

Title Terms: REMOVE; PRODUCT; CHEMICAL; HYDRIDE; SOLUTION; COOLING; SOLUTION; WITHDRAW; REACTOR; REMOVE; PRECIPITATION; DELIVER; HEAT; CHEMICAL; HYDRIDE; SOLUTION; BACK; REACTOR
Derwent Class: E36; J01; L03; X16
International Patent Class (Main): C01B-003/06; C01B-006/34

21/7,DE/25 (Item 8 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015505889
WPI Acc No: 2003-568036/200353
Filter system for adsorbing contaminants from molten carbonate *fuel* *cell* exhaust *stream*, has *filter* substrate coated with material comprising inorganic adsorbent secured to the substrate by inorganic binder, and acidic material
Patent Assignee: SUD CHEM PROTOTECH INC (SCHP-N)
Inventor: BAR-ILAN A; HUANG Y; MACKENZIE S
Number of Countries: 100 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20030113596	A1	20030619	US 200125662	A	20011219	200353	B
WO 200353545	A1	20030703	WO 2002US38624	A	20021205	200354	

Priority Applications (No Type Date): US 200125662 A 20011219
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030113596	A1		6	H01M-008/04	
WO 200353545	A1	E		B01D-053/04	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM

ZW
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SI SK SL SZ TR TZ UG ZM ZW

Abstract (Basic): US 20030113596 A1
Abstract (Basic):

NOVELTY - A filter system for adsorbing contaminants from a molten carbonate *fuel* *cell* exhaust *stream* comprises a *filter* substrate coated with a material comprising an inorganic adsorbent secured to the filter substrate by an inorganic binder, and an acidic material coated onto the filter substrate.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(a) the production of the above filter system for filtering exhaust gases from a molten carbonate *fuel* *cell* prior to passage through an oxidation catalyst, which comprises preparing a filter substrate, coating the filter substrate with an inorganic adsorbent by use of an inorganic binder, and treating the coated filter substrate with an acidic material;

(b) filtering contaminants which are present in an exhaust stream of a molten carbonate *fuel* *cell*, which comprises passing a fuel stream through the molten carbonate *fuel* *cell*, passing at least a portion of an exhaust stream containing inorganic contaminants through a filter system, and filtering the inorganic contaminants from the exhaust stream by use of the filter system;

(c) an exhaust treatment system for adsorbing contaminants from a molten carbonate *fuel* *cell*, which comprises the inventive filter system and an oxidation catalyst; and

(d) the production of an exhaust treatment system for filtering exhaust gases from a molten carbonate *fuel* *cell*, which comprises preparing the filter system, preparing an oxidation catalyst for *fuel* *cells*, and placing the filter system and the oxidation catalyst on-line to filter the exhaust gases from the molten carbonate *fuel* *cell*.

USE - The filter system is used in an exhaust treatment system for filtering or adsorbing contaminants from a molten carbonate *fuel* *cell* exhaust stream (claimed).

ADVANTAGE - The filter system balances the need for a high loading with the maintenance of a low pressure drop.

pp; 6 DwgNo 0/0

Title Terms: FILTER; SYSTEM; ADSORB; CONTAMINATE; MOLTEN; CARBONATE; FUEL; CELL; EXHAUST; STREAM; FILTER; SUBSTRATE; COATING; MATERIAL; COMPRISE; INORGANIC; ADSORB; SECURE; SUBSTRATE; INORGANIC; BIND; ACIDIC; MATERIAL
Derwent Class: J01; J04; L03; X16
International Patent Class (Main): B01D-053/04; H01M-008/04
International Patent Class (Additional): H01M-008/14

21/7,DE/30 (Item 13 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015046526
WPI Acc No: 2003-107042/200310
Fuel *cell* system passes water through bypass flowpath based on differential pressure of ion removal filter
Patent Assignee: NISSAN MOTOR CO LTD (NSMO)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2002298885	A	20021011	JP 200198224	A	20010330	200310	B

Priority Applications (No Type Date): JP 200198224 A 20010330
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2002298885	A		7	H01M-008/04	

Abstract (Basic): JP 2002298885 A
Abstract (Basic):
NOVELTY - Water from a tank (11) bypasses an ion removal *filter* (16) and *flows* through a bypass flowpath (9c) based on the differential pressure of the filter.
USE - *Fuel* *cell* system.
ADVANTAGE - Since the water bypasses the filter based on the differential pressure of the filter, the pressure loss of the filter is suppressed, hence maintaining the efficiency of the *fuel* *cell* system.
DESCRIPTION OF DRAWING(S) - The figure shows the schematic diagram of the *fuel* *cell* system.
Bypass flowpath (9c)
Tank (11)
Removal filter (16)
pp; 7 DwgNo 1/9
Title Terms: FUEL; CELL; SYSTEM; PASS; WATER; THROUGH; BASED; DIFFERENTIAL; PRESSURE; ION; REMOVE; FILTER
Derwent Class: X16
International Patent Class (Main): H01M-008/04
International Patent Class (Additional): H01M-008/10

21/7,DE/32 (Item 15 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014313253

WPI Acc No: 2002-133955/200218
Water purifier for lakes, marshes, has floating structure installed with *fuel* *cell* to drive pump for *circulating* water through *filter*
Patent Assignee: MATSUSHITA SEIKO KK (MATK)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2001259671	A	20010925	JP 200079773	A	20000322	200218	B

Priority Applications (No Type Date): JP 200079773 A 20000322
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2001259671	A		8	C02F-003/06	

Abstract (Basic): JP 2001259671 A
Abstract (Basic):
NOVELTY - A mooring rope (2) attached to an anchor (1) is connected to a floating structure (3). A *fuel* *cell* (6) attached with a hydrogen cylinder (4), drives a pump (12) to circulate water through a filter (9) in a bioreactor (10).
USE - For purifying water of lakes, marshes, dam, irrigation canal, river.
ADVANTAGE - Provision of *fuel* *cell* ensures continuous supply of power to purifier, to perform purification continuously. The structure of purifier becomes compact.
DESCRIPTION OF DRAWING(S) - The figure shows the explanatory view of water purifier. (Drawing includes non-English language text).
Anchor (1)
Mooring rope (2)
Floating structure (3)
Hydrogen cylinder (4)
Fuel *cell* (6)
Filter (9)
Bioreactor (10)
Pump (12)
pp; 8 DwgNo 1/9
Title Terms: WATER; PURIFICATION; LAKE; MARSH; FLOAT; STRUCTURE; INSTALLATION; FUEL; CELL; DRIVE; PUMP; CIRCULATE; WATER; THROUGH; FILTER
Derwent Class: D15
International Patent Class (Main): C02F-003/06
International Patent Class (Additional): B01D-035/027; C02F-007/00; H01M-008/00

21/7,DE/33 (Item 16 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014272131
WPI Acc No: 2002-092833/200213
Bath water *circulation* and *purification* system has electrolytic sterilization device which supplies hydrogen gas, oxygen gas formed at electrodes to *fuel* *cell*
Patent Assignee: SANYO ELECTRIC CO LTD (SAOL); TOTTORI SANYO DENKI KK (TOTT)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2001276830	A	20011009	JP 2000100871	A	20000403	200213	B

Priority Applications (No Type Date): JP 2000100871 A 20000403
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2001276830	A		6	C02F-001/46	

Abstract (Basic): JP 2001276830 A
Abstract (Basic):

NOVELTY - A bath water circulation path (8) is provided with a heater (9) for heating bath water to predetermined temperature, an electrolytic sterilization device (11) which produces chlorine by electrolysis of bath water and a filtration device (10) which filters water. Hydrogen gas and oxygen gas formed at the electrodes of the sterilization device are supplied to a *fuel* *cell* (24).

USE - For *circulation* and *purification* of bath water.

ADVANTAGE - Power consumption of the system is reduced sharply, since the *fuel* *cell* carries out electric power generation using hydrogen gas and oxygen gas generated at the electrodes of the sterilization device. Generated electric power is utilized by the heater and the electrolytic sterilization device.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of the bath water *circulation* and *purification* system. (Drawing includes non-English language text).

Bath water circulation path (8)
Heater (9)
Filtration device (10)
Electrolytic sterilization device (11)
Fuel *cell* (24)
pp; 6 DwgNo 1/4

Title Terms: BATH; WATER; CIRCULATE; PURIFICATION; SYSTEM; ELECTROLYTIC; STERILE; DEVICE; SUPPLY; HYDROGEN; GAS; OXYGEN; GAS; FORMING; ELECTRODE; FUEL; CELL
Derwent Class: D15; J03; P28; X16; X25; X27
International Patent Class (Main): C02F-001/46
International Patent Class (Additional): A47K-003/00; C02F-001/463; C02F-001/465; C02F-001/50; C02F-009/00; H01M-008/00; H01M-008/06; H01M-008/10

21/7,DE/37 (Item 20 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013146234
WPI Acc No: 2000-318106/200027
Production of hydrogen with carbon mono- and dioxide below minimum level, includes receiving a feedstock and delivering it to a catalyst bed, passing the product *stream* to a *purification* module and through a polishing catalyst bed
Patent Assignee: IDATECH LLC (IDAT-N); NORTHWEST POWER SYSTEMS LLC (NWPO-N) ; IDA TECH LLC (IDAT-N); EDLUND D J (EDLU-I); PLEDGER W A (PLED-I)
Inventor: EDLUND D J; PLEDGER W A
Number of Countries: 087 Number of Patents: 016
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200022690	A1	20000420	WO 99US8166	A	19990414	200027 B
AU 9935606	A	20000501	AU 9935606	A	19990414	200036
US 6221117	B1	20010424	US 96741057	A	19961030	200125
			US 97951091	A	19971015	
			US 98190917	A	19981112	
			US 99291447	A	19990413	
BR 9914560	A	20010626	BR 9914560	A	19990414	200140
			WO 99US8166	A	19990414	
EP 1138096	A1	20011004	EP 99917496	A	19990414	200158
			WO 99US8166	A	19990414	
KR 2001089303	A	20010929	KR 2001704749	A	20010414	200220
US 6376113	B1	20020423	US 98190917	A	19981112	200232
AU 745858	B	20020411	AU 9910849	A	19981014	200237
			AU 9935606	A	19990414	
US 20020119353	A1	20020829	US 98190917	A	19981112	200259
			US 2002127030	A	20020419	
CA 2345966	C	20030401	CA 2345966	A	19990414	200328
			WO 99US8166	A	19990414	
CA 2413994	A1	20000420	CA 2345966	A	19990414	200328
			CA 2413994	A	19990414	
JP 2003522087	W	20030722	WO 99US8166	A	19990414	200350
			JP 2000576506	A	19990414	
JP 2003277019	A	20031002	JP 2000576506	A	19990414	200367
			JP 2001372454	A	19990414	
JP 2003282119	A	20031003	JP 2000576506	A	19990414	200367
			JP 2001372465	A	19990414	
CA 2447220	A1	20000420	CA 2413994	A	19990414	200403
			CA 2447220	A	19990414	
CA 2413994	C	20040203	CA 2345966	A	19990414	200411
			CA 2413994	A	19990414	

Priority Applications (No Type Date): US 99291447 A 19990413; WO 98US21670 A 19981014; US 98190917 A 19981112; US 96741057 A 19961030; US 97951091 A 19971015; US 2002127030 A 20020419

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200022690	A1	E	100	H01M-008/22	
Designated States (National): AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW					
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW					
AU 9935606	A				Based on patent WO 200022690
US 6221117	B1			C10J-003/68	CIP of application US 96741057 CIP of application US 97951091 CIP of application US 98190917 CIP of patent US 5861137 CIP of patent US 5997594
BR 9914560	A				Based on patent WO 200022690
EP 1138096	A1	E			Based on patent WO 200022690
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					
US 6376113	B1			H01M-008/06	
AU 745858	B			H01M-008/22	Div ex application AU 9910849 Previous Publ. patent AU 9935606 Based on patent WO 200022690
US 20020119353	A1			H01M-008/06	Cont of application US 98190917 Cont of patent US 6376113
CA 2345966	C	E		H01M-008/22	Based on patent WO 200022690
CA 2413994	A1	E		B01D-069/02	Div ex application CA 2345966
JP 2003522087	W		113	C01B-003/32	Based on patent WO 200022690
JP 2003277019	A		37	C01B-003/58	Div ex application JP 2000576506
JP 2003282119	A		41	H01M-008/06	Div ex application JP 2000576506
CA 2447220	A1	E		C01B-003/50	Div ex application CA 2413994
CA 2413994	C	E		B01D-069/02	Div ex application CA 2345966

Abstract (Basic): WO 200022690 A1

Abstract (Basic):

NOVELTY - Production of hydrogen containing carbon mono- and dioxide at concentrations below minimum level, includes receiving a reforming feedstock, delivering it to a reforming catalyst bed, passing the reforming product stream to a hydrogen purification module, and passing it through a polishing catalyst bed.

DETAILED DESCRIPTION - Production of hydrogen containing concentrations of CO and CO2 below defined minimum level, comprises:

(a) receiving a reforming feedstock comprising steam and at least an alcohol vapor and a hydrocarbon vapor;

(b) delivering the reforming feedstock to a reforming catalyst bed

to produce a reforming product stream comprising hydrogen, CO and CO2;

(c) passing the product stream to a hydrogen purification module containing a hydrogen-selective membrane to produce permeate and byproduct streams; and

(d) passing the product stream through a polishing catalyst bed containing methanation catalyst to convert a portion of CO and CO2 in the permeate stream into methane, thus yielding a product stream comprising hydrogen, methane and CO and CO2 below defined minimum level.

An INDEPENDENT CLAIM is also included for a steam reformer (512) comprising:

(i) a shell having an outer surface and a heated reforming region to receive a reforming feedstock;

(ii) a reforming region (562) including a reforming catalyst bed (552) to receive the feedstock and convert it into a reforming product stream comprising hydrogen, carbon monoxide and carbon dioxide;

(iii) a hydrogen purification module (554) including a hydrogen-selective membrane in fluid communication with the reforming catalyst bed to produce permeate and byproduct streams (505) comprising a portion of the reforming product stream which passes and does not pass through the membrane, respectively; and

(iv) a polishing catalyst bed (556) including methanation catalyst where the catalyst bed is in fluid communication with the module and adapted to receive the permeate stream and reduce the concentration of carbon dioxide (CO2) and carbon monoxide (CO) to below defined minimum concentrations by catalytic reaction to produce methane, thus yielding a product stream (503) comprising hydrogen and methane and CO2 and CO at concentrations below minimum.

USE - For production of purified hydrogen.

ADVANTAGE - The process produces purified hydrogen with no additional elements contributing to a loss in *fuel* *cell* efficiency.

DESCRIPTION OF DRAWING(S) - The figure shows a steam reformer with internal hydrogen purification using plate membrane elements.

Product stream (503)
Byproduct stream (505)
Reformer (512)
Reforming catalyst tube (552)
Plate membrane module (554)
Polishing catalyst tube (556)
Reformation region (562)

pp; 100 DwgNo 9/36

Title Terms: PRODUCE; HYDROGEN; CARBON; MONO; BELOW; MINIMUM; LEVEL; RECEIVE; FEEDSTOCK; DELIVER; CATALYST; BED; PASS; PRODUCT; STREAM; PURIFICATION; MODULE; THROUGH; POLISH; CATALYST; BED

Derwent Class: E36; H04; J04; L03; X16

International Patent Class (Main): B01D-069/02; C01B-003/32; C01B-003/50; C01B-003/58; C10J-003/68; H01M-008/22

International Patent Class (Additional): B01D-043/00; B01D-053/22; B01D-061/00; B01D-063/08; B01D-071/02; B01J-008/02; B01J-010/00; B01J-047/02; C01B-003/34; C01B-003/38; C01B-003/56; C10K-001/00; C10K-003/00; C10K-003/04; H01M-002/14; H01M-008/06; H01M-008/10; H01M-008/24

21/7,DE/48 (Item 31 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010605308
WPI Acc No: 1996-102261/199611
Water treatment for *fuel* *cell* - involves filtering only when suspended solids density exceeds set valve
Patent Assignee: TOKYO GAS CO LTD (TOLG)
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 8007912	A	19960112	JP 94142758	A	19940624	199611	B
JP 3407826	B2	20030519	JP 94142758	A	19940624	200335	

Priority Applications (No Type Date): JP 94142758 A 19940624
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 8007912	A		5	H01M-008/04	
JP 3407826	B2		5	H01M-008/04	Previous Publ. patent JP 8007912

Abstract (Basic): JP 8007912 A
When the density of suspensions in the water flowing in a water treatment system for a *fuel* *cell* reaches the limit of the allowable range, the water in the treatment system is *flowed* to the *filter* (20) side to remove the suspensions collectively. When the density is lowered to the specified value or below, the filter (20) is by-passed.
ADVANTAGE - The frequency of exchanging of the filter is reduced.
Dwg.1/5
Title Terms: WATER; TREAT; FUEL; CELL; FILTER; SUSPENSION; SOLID; DENSITY; SET; VALVE
Derwent Class: L03; X16
International Patent Class (Main): H01M-008/04
International Patent Class (Additional): B01D-035/147

? t s22/ti/all

22/TI/1 (Item 1 from file: 6)
DIALOG(R)File 6:(c) 2004 NTIS, Intl Cpyrght All Rights Res. All rts. reserv.

Low cost, *radial* *flow*, solid oxide *fuel* *cell*

22/TI/2 (Item 2 from file: 6)
DIALOG(R)File 6:(c) 2004 NTIS, Intl Cpyrght All Rights Res. All rts. reserv.

Thermally Regenerative *Fuel* *Cells*
(Final rept)

22/TI/3 (Item 3 from file: 6)
DIALOG(R)File 6:(c) 2004 NTIS, Intl Cpyrght All Rights Res. All rts. reserv.

New simplified method to calculate the streaming reactivity for pin lattices of fast reactors

22/TI/4 (Item 1 from file: 2)
DIALOG(R)File 2:(c) 2004 Institution of Electrical Engineers. All rts. reserv.

Title: New interconnections for planar alloy-separator SOFC stacks

22/TI/5 (Item 2 from file: 2)
DIALOG(R)File 2:(c) 2004 Institution of Electrical Engineers. All rts. reserv.

Title: Side-lead interconnection for alloy-separator planar stacks

22/TI/6 (Item 3 from file: 2)
DIALOG(R)File 2:(c) 2004 Institution of Electrical Engineers. All rts. reserv.

Title: Three-dimensional and time-dependent simulation of a planar solid oxide *fuel* *cell* stack

22/TI/7 (Item 4 from file: 2)
DIALOG(R)File 2:(c) 2004 Institution of Electrical Engineers. All rts. reserv.

Title: A model to predict the removal of oxygen from air using a zirconia solid electrolyte membrane

22/TI/8 (Item 1 from file: 8)
DIALOG(R)File 8:(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

Title: Determining the impact of distributed generation on power systems: Part 1 - Radial distribution systems

22/TI/9 (Item 2 from file: 8)
DIALOG(R)File 8:(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

Title: New interconnections for planar alloy-separator SOFC stacks

22/TI/10 (Item 3 from file: 8)
DIALOG(R)File 8:(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

Title: Three-dimensional and time-dependent simulation of a planar solid oxide *fuel* *cell* stack

22/TI/11 (Item 4 from file: 8)
DIALOG(R)File 8:(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

Title: Model to predict the removal of oxygen from air using a zirconia solid electrolyte membrane.

22/TI/12 (Item 5 from file: 8)
DIALOG(R)File 8:(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

Title: Model to predict the removal of oxygen from air using a zirconia solid electrolyte membrane.

22/TI/13 (Item 6 from file: 8)
DIALOG(R)File 8:(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

Title: BIPOLAR ELECTROCHEMICAL PUMP CELL.

22/TI/14 (Item 1 from file: 94)
DIALOG(R)File 94:(c)2004 Japan Science and Tech Corp(JST). All rts. reserv.

Improvement of Core Calculation Model of High Temperature Engineering Test Reactor. Related with Excess Reactivity.

22/TI/15 (Item 2 from file: 94)
DIALOG(R)File 94:(c)2004 Japan Science and Tech Corp(JST). All rts. reserv.

Cell edge interconnection for planar alloy separator stacks.

22/TI/16 (Item 1 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Scientific report 1999; Rapport scientifique 1999

22/TI/17 (Item 2 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: New interconnections for planar alloy-separator SOFC stacks
Title: Materials for electrochemical energy storage and conversion II -- Batteries, capacitors and *fuel* *cells*. Materials Research Society symposium proceedings, Volume 496

22/TI/18 (Item 3 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Three-dimensional and time-dependent simulation of a planar solid oxide *fuel* *cell* stack

22/TI/19 (Item 4 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Low cost, *radial* *flow*, solid oxide *fuel* *cell*
Title: Proceedings of the joint contractors meeting: FE/EE Advanced Turbine Systems conference FE *fuel* *cells* and coal-fired heat engines conference

22/TI/20 (Item 5 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Low cost, *radial* *flow*, solid oxide *fuel* *cell*

22/TI/21 (Item 6 from file: 103)
DIALOG(R)File 103:(c) 2004 Contains copyrighted material. All rts. reserv.

Title: Solid oxide *fuel* *cell*
Original Title: Kotai denkaishitsu gata nenryo denchi

22/TI/22 (Item 7 from file: 103)

Title: A model to predict the removal of oxygen from air using a zirconia solid electrolyte membrane
Title: Proceedings of the 23rd intersociety energy conversion engineering conference
Series/Collection Title: Volume 2: Mechanical energy storage, thermal energy storage, *fuel* *cells*, battery energy storage-terrestrial applications, space battery energy storage, superconductivity

22/TI/23 (Item 8 from file: 103)

Title: Neutron streaming along narrow gaps in VHTR core
Title: Proceedings of the sixth international conference on radiation shielding, 2

22/TI/24 (Item 9 from file: 103)

Title: Interference effect of neutron streaming between different fast critical assembly cells

22/TI/25 (Item 10 from file: 103)

Title: Bipolar electrochemical pump cell

22/TI/26 (Item 11 from file: 103)

Title: Temperature problem in electrochemical cells built on the Eloflux principle using as an example the H/sub 2//O/sub 2/ *fuel* *cell*

22/TI/27 (Item 1 from file: 241)

Radial Flow Solid Oxide Fuel Cell Development

22/TI/28 (Item 2 from file: 241)

Radial Flow Solid Oxide Fuel Cell Development

22/TI/29 (Item 3 from file: 241)

Radial Flow Solid Oxide Fuel Cell Development (COF)

22/TI/30 (Item 1 from file: 347)

COOLING METHOD OF *FUEL* *CELL*

22/TI/31 (Item 2 from file: 347)

FUEL *CELL* SYSTEM

22/TI/32 (Item 3 from file: 347)

FUEL *CELL* SYSTEM AND ITS MICROBIAL ORGANISM SUPPRESSION METHOD

22/TI/33 (Item 4 from file: 347)

FUEL BATTERY MODULE WITH BUILT-IN AUXILIARY HEATER UNIT AND PLANT PROVIDED WITH THE MODULE

22/TI/34 (Item 5 from file: 347)

CYLINDRICAL *FUEL* *CELL*

22/TI/35 (Item 6 from file: 347)
DIALOG(R)File 347:(c) 2004 JPO & JAPIO. All rts. reserv.

CATALYST REDUCING METHOD AND DEVICE IN *FUEL* *CELL* SYSTEM

22/TI/36 (Item 7 from file: 347)
DIALOG(R)File 347:(c) 2004 JPO & JAPIO. All rts. reserv.

SOLID-STATE ELECTROLYTIC TYPE *FUEL* *CELL*

22/TI/37 (Item 8 from file: 347)
DIALOG(R)File 347:(c) 2004 JPO & JAPIO. All rts. reserv.

TEMPERATURE CONTROL DEVICE FOR *FUEL* *CELL*

22/TI/38 (Item 9 from file: 347)
DIALOG(R)File 347:(c) 2004 JPO & JAPIO. All rts. reserv.

TEMPERATURE CONTROLLER OF *FUEL* *CELL*

22/TI/39 (Item 10 from file: 347)
DIALOG(R)File 347:(c) 2004 JPO & JAPIO. All rts. reserv.

FUSED CARBONATE TYPE *FUEL* *CELL*

22/TI/40 (Item 1 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Heat exchanger for *fuel* *cell* used in electric vehicle, includes electric insulating layer between metal tubes into which water for cooling battery and *radiator* *flows* respectively

22/TI/41 (Item 2 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Multi channel fluid converting method e.g. for metal *fuel* *cell*, involves impacting multiphase fluid flow and receiving intermediate flows at inlet portions of multiple output channels having constant cross-section

22/TI/42 (Item 3 from file: 350)

Water quality monitoring system for preventing fouling in water quality sensors, comprises housing having interior cavity formed for disposing monitoring sensor, and ultraviolet light sources disposed in interior cavity

22/TI/43 (Item 4 from file: 350)

Parallel electrical connector system, has three connector units, where two units are fixed to separate current conducting end plates of *fuel* *cell* stacks and another unit fixed to separator plates of stacks

22/TI/44 (Item 5 from file: 350)

Fuel-*cell* system has feeding pipes formed in rotary shaft to supply cooling water, heating gas and oxidizing-agent gas inside rotary shaft through *radial* *flow* passageways respectively

22/TI/45 (Item 6 from file: 350)

Electric vehicle e.g. hybrid car comprises air-cooler which cools discharged air from compressor, integrated with radiator which cools *fuel* *cell*

22/TI/46 (Item 7 from file: 350)

Manifold for converting single multiphase fluid flow into separate channeled flows used in, e.g. *fuel* *cell*, has fluid inlet for impacting the flow against a surface perpendicular to direction of flow, and fluid outlets

22/TI/47 (Item 8 from file: 350)

Fuel *cell* system for motor vehicle, increases cell temperature by controlling cooling water pump and humidifier, based on dew point of heating and oxidizing agent gases

22/TI/48 (Item 9 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Fuel *cell* module and structure for gas supply to *fuel* *cell* for improving the efficiency of fuel generation

22/TI/49 (Item 10 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Solid electrolyte planar *fuel* *cell* stack has oxidant gas supply member for supplying oxidant gas into second interconnect layer

22/TI/50 (Item 11 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Hydrogen-generating apparatus has reforming reaction zone, flow transition zone, reaction zones between reaction zone base and ceiling, product collection zone, and heat exchanger tubes

22/TI/51 (Item 12 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Interconnector for solid-oxide *fuel* *cell* stack is configured to provide fuel and oxidant channels integrally formed with one another on its opposing surfaces

22/TI/52 (Item 13 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Solid oxide *fuel* *cell* stack for direct current generation, has fuel and oxidant channels formed in opposing surfaces of interconnect connecting multiple solid oxide *fuel* *cells*

22/TI/53 (Item 14 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Operation of *fuel* *cell* system uses air with specified stoichiometric rate

22/TI/54 (Item 15 from file: 350)

DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Autothermal reformer assembly for reforming light hydrocarbon fuels, has air/fuel/steam mixing station having transfer tubes which extend through manifold from inlet chamber to inlet end of catalyst bed

22/TI/55 (Item 16 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Single pipe cylindrical reformer has circulating flow passages formed in radial direction layers between inner tube and intermediates tubes and between intermediate tubes and outer tube so reforming catalyst can be packed

22/TI/56 (Item 17 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Evaporator comprising stack of circular plates in which the increasing *radial* *flow* is compensated by increasing passage section

22/TI/57 (Item 18 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Flexible inorganic electrolyte *fuel* *cell* design

22/TI/58 (Item 19 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Reformer reactor for production of hydrogen gas from hydrocarbons

22/TI/59 (Item 20 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Fuel *cell* module with integral auxiliary heating

22/TI/60 (Item 21 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Wall penetration shielding assembly for high energy electromagnetic, particulate and nuclear radiation

22/TI/61 (Item 22 from file: 350)

Solid oxide *fuel* *cell* with simple construction - requiring no gas seal, large axial clamping force, separate air preheater, external reformer or preformer, or external steam supply

22/TI/62 (Item 23 from file: 350)

Self-supporting gas generation plant supplying gas engine from biomass fuel - using steam content in raw gas as process control variable for gasification process, which is adjusted as function of gas properties at gas engine

22/TI/63 (Item 24 from file: 350)

Fuel processor for (non)catalytic processes being heat transfer driven - is used as a vaporiser and as a methanol reformer producing a hydrogen containing reformate fuel stream for an electrochemical *fuel* *cell*

22/TI/64 (Item 25 from file: 350)

Coflow planar *fuel* *cell* stack for solid electrolytes - has internal manifold and tubular porous elements for controlling rate and uniformity of *radial* *flow* and oxidant fuel flows

22/TI/65 (Item 26 from file: 350)

Fuel battery power generation system - has air turbine arranged near back of *radiator* for *circulating* cooling water to *fuel* *cell* stack

22/TI/66 (Item 27 from file: 350)

Module for an ion conducting device with electrolyte elements - has transverse and longitudinal passageways in each element aligned with respective central and surrounding apertures in end plates

22/TI/67 (Item 28 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Solid electrolyte *fuel* *cell* - directs reactant gases to *flow* *radially* between central and peripheral portions, reducing travel path

22/TI/68 (Item 29 from file: 350)
DIALOG(R)File 350:(c) 2004 Thomson Derwent. All rts. reserv.

Fuel *cell* stack - in which reacting gases *flow* *radially* through cell in countercurrent directions

? t s22/7,de/30,31,32,34

22/7,DE/30 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

07629951
COOLING METHOD OF *FUEL* *CELL*

PUB. NO.: 2003-123804 [JP 2003123804 A]
PUBLISHED: April 25, 2003 (20030425)
INVENTOR(s): IMAZEKI MITSUHARU
USHIO TAKESHI
SHIMOYAMA YOSHIRO
APPLICANT(s): HONDA MOTOR CO LTD
APPL. NO.: 2001-318159 [JP 2001318159]
FILED: October 16, 2001 (20011016)

ABSTRACT

PROBLEM TO BE SOLVED: To stop cooling liquid of high conductivity from flowing into a *fuel* *cell*.

SOLUTION: With the cooling method of the *fuel* *cell* 1 in which heat accompanying power generation of the *fuel* *cell* 1 is radiated with a *radiator* 4 by *circulation* of cooling liquid, an ion exchanger 5 for removing ions existing in the cooling liquid is installed in a cooling liquid circulation system, by which, a part of the cooling liquid is *circulated* between the *radiator* 4 and the ion exchanger 5 to remove ions in the cooling liquid in the heat exchanger 5 when temperature of the cooling liquid is lower than predetermined, and the cooling liquid is circulated between the *fuel* *cell* 1 and the heat exchanger 4 to cool down the *fuel* *cell* 1 when temperature of the cooling liquid is bigbur than predetermined.

22/7,DE/31 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO

07411536
FUEL *CELL* SYSTEM

PUB. NO.: 2002-280046 [JP 2002280046 A]
PUBLISHED: September 27, 2002 (20020927)
INVENTOR(s): SATO KAZUO
ARAI TAKAYUKI
APPLICANT(s): CALSONIC KANSEI CORP
NISSAN MOTOR CO LTD
APPL. NO.: 2001-076407 [JP 200176407]
FILED: March 16, 2001 (20010316)

ABSTRACT
PROBLEM TO BE SOLVED: To provide a *fuel* *cell* system capable of efficiently recovering moisture in exhaust gas exhausted from an oxidizer electrode of a *fuel* *cell* main body, miniaturing a water condenser and avoiding overheating.

SOLUTION: Cooling water of a *fuel* *cell* vehicle is *circulated* in a *radiator* 2, a cooling water circulation pump 41, a driving motor 40, a water passage change-over valve 4 and a water-cooling type water condenser 25. The water passage change-over valve 44 is changed over to a by-pass channel 47 from a conduit run 46 to pass the water condenser 25 in the case when a water level detected by a water level sensor (not shown in the drawing) of a water tank 30 is sufficient or in the case when temperature detected by a cooling water temperature sensor 48 is higher than a specified value.

22/7,DE/32 (Item 3 from file: 347)
DIALOG(R)File 347:JAPIO

07401706
FUEL *CELL* SYSTEM AND ITS MICROBIAL ORGANISM SUPPRESSION METHOD

PUB. NO.: 2002-270211 [JP 2002270211 A]
PUBLISHED: September 20, 2002 (20020920)
INVENTOR(s): ITO YASUYUKI

TAKEGAWA TOSHIHIRO
APPLICANT(s): NISSAN MOTOR CO LTD
APPL. NO.: 2001-071560 [JP 200171560]
FILED: March 14, 2001 (20010314)

ABSTRACT

PROBLEM TO BE SOLVED: To provide a *fuel* *cell* system that has a high reliability and good efficiency.

SOLUTION: The cooling water, which absorbs heat generated at the *fuel* *cell* 1 and radiates at the *radiator* 15, is *circulated* by a pump 16 and sent to a detector 17. The detector 17 detects whether or not there exists microbial organism in the cooling water and if it obtains the result that there exists, it gives an instruction to the germicidal device 18 for killing the microbial organism. The germicidal device 18 kills the microbial organism based on this instruction by irradiating ultraviolet rays. Accordingly, such a state that circulation system of the cooling water is clogged by the microbial organism or that the performance of each equipment is deteriorated can be avoided in advance. On the other hand, if the result is obtained that there does not exists microbial organism, the germicidal device 18 does not operate. Hence it becomes possible to avoid the electric power being wasted by an unnecessary irradiation of ultraviolet rays.

22/7,DE/34 (Item 5 from file: 347)
DIALOG(R)File 347:JAPIO

05192678
CYLINDRICAL *FUEL* *CELL*

PUB. NO.: 08-148178 [JP 8148178 A]
PUBLISHED: June 07, 1996 (19960607)
INVENTOR(s): ARIMA NOBUYUKI
TSURU ATSUSHI
APPLICANT(s): ISHIKAWAJIMA HARIMA HEAVY IND CO LTD [000009] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 06-290263 [JP 94290263]
FILED: November 25, 1994 (19941125)
JAPIO CLASS: 42.9 (ELECTRONICS -- Other); 35.0 (NEW ENERGY SOURCES -- General)

ABSTRACT

PURPOSE: To provide a cylindrical *fuel* *cell* having a high sealing function, freedom from the easy occurrence of a shortcircuit and migration

between cells, a large reaction area ratio relative to a separator area, allowing process gases to flow approximately evenly to each stacked cell, and further having a wide allowance range for stacking cells as well as small differential pressure between electrodes.

CONSTITUTION: This cell has doughnut type cells 11 and a plurality of circular separators 12 clamping each of the cells 11. Also, the separators 12 have a center manifold 15a for cathode gases, a plurality of the first and second manifolds 15b and 15c for anode gases, a pair of doughnut type reaction sections 16 laid between and on both sides of each of the manifolds 15b and 15c so as to allow the anode gases and cathode gases to *radially* *flow* on one side. In this case, cathode gases 6a are supplied from the outside of the separators 12 to each cathode through gaps along the surface thereof, and cathode gases 6b after reaction are discharged outside from the center manifold 15a.

STN search


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=> file hca
FILE 'HCA' ENTERED AT 14:20:23 ON 04 MAY 2004
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=> display history full l1-


     FILE 'HCA' ENTERED AT 13:58:00 ON 04 MAY 2004
L1         41063 SEA FUEL?(2A)(CELL OR CELLS) OR FUELCELL?
L2        217748 SEA CIRCULAT?
L3        902271 SEA FLOW OR FLOWS OR FLOWED OR FLOWING# OR STREAM?
L4           287 SEA L2(3A)(STERILI? OR DECONTAMINA? OR SANIT? OR
                    DISINFECT? OR ANTISEP? OR ASEPT?)
L5           700 SEA L3(3A)(STERILI? OR DECONTAMINA? OR SANIT? OR
                    DISINFECT? OR ANTISEP? OR ASEPT?)
L6          1588 SEA L2(3A)(CLEANS? OR PURIF? OR FILTER? OR FITRATION? OR
                    MICROFILT? OR ULTRAFILT?)
L7          9245 SEA L3(3A)(CLEANS? OR PURIF? OR FILTER? OR FITRATION? OR
                    MICROFILT? OR ULTRAFILT?)
L8          5062 SEA L1 AND (L2 OR L3)
L9             3 SEA L1 AND L4
L10            0 SEA L1 AND L5
L11            6 SEA L1 AND L6
L12           27 SEA L1 AND L7
L13            8 SEA L9 OR L11
L14           27 SEA L12 NOT L13

     FILE 'HCAPLUS' ENTERED AT 14:06:26 ON 04 MAY 2004
L15          107 SEA ITOU Y?/AU
L16          753 SEA TAKEKAWA ?/AU
L17            1 SEA L15 AND L16

     FILE 'HCA' ENTERED AT 14:08:19 ON 04 MAY 2004
L18        11060 SEA (CLEANS? OR PURIF? OR FILTER? OR FITRATION? OR
                    MICROFILT? OR ULTRAFILT?)(2A)(MICROORGANISM? OR MICRORGAN
                    ISM? OR BACTERI? OR BACIL? OR MICROBE# OR MICROBIAL? OR
                    FUNG?)
L19        53051 SEA (STERILI? OR DECONTAMINA? OR SANIT? OR DISINFECT? OR
                    ANTISEP? OR ASEPT? OR RADIA? OR IRRAD? OR BOMBARD? OR
                    PHOTOLY? OR UV OR UVA OR UVB OR SUV OR LUV OR ULTRAVIOLET
                    ? OR ULTRA(A)VIOLET?)(2A)(MICROORGANISM? OR MICRORGANISM?
                     OR BACTERI? OR BACIL? OR MICROBE# OR MICROBIAL? OR
                    FUNG?)
L20          624 SEA (STERILI? OR DECONTAMINA? OR SANIT? OR DISINFECT? OR
                    ANTISEP? OR ASEPT? OR RADIA? OR IRRAD? OR BOMBARD? OR
```

PHOTOLY? OR UV OR UVA OR UVB OR SUV OR LUV OR ULTRAVIOLET ? OR ULTRA(A)VIOLET?)(2A)COOLANT?
L21 726 SEA (CLEANS? OR PURIF? OR FILTER? OR FITRATION? OR MICROFILT? OR ULTRAFILT?)(2A)COOLANT?
L22 1 SEA L1 AND L18
L23 4 SEA L1 AND L19
L24 3 SEA L1 AND L20
L25 3 SEA L1 AND L21
L26 18 SEA L13 OR L22 OR L23 OR L24 OR L25
L27 26 SEA L14 NOT L26

=> d l26 1-13 cbib abs hitind

L26 ANSWER 1 OF 18 HCA COPYRIGHT 2004 ACS on STN
140:250024 **Microbial** monitoring and **disinfection** aboard NASA spacecraft. Ott, C. Mark; Pierson, Duane L. (EASI, Wyle Laboratories, Houston, TX, 77058, USA). Disinfection 2002, Health and Safety Achieved through Disinfection, Conference Proceedings, St. Petersburg, FL, United States, Feb. 17-20, 2002, 1-9. Water Environment Federation: Alexandria, Va. (English) 2002. CODEN: 69EVIQ.

AB As NASA preps. for long-term missions aboard the International Space Station (ISS) and the eventual exploration of Mars, environmental factors such as the disinfection of potable water becomes increasingly important. During the space shuttle program, NASA's human exploration of space primarily had been limited to short-term missions and single-pass, easily cleaned water systems. Currently aboard ISS, potable water is supplied by transport of ground-filled portable containers, prodn. from the space shuttle **fuel cells**, and regeneration of condensate collected in the Russian-built SRV-K. The interconnection of these systems is complex. In addn., the disinfection of potable water aboard ISS is achieved using either iodine or silver, depending on the water source. Monitoring potable water and other areas that affect the water system is accomplished using simple devices that must operate using limited power, vol., mass, and astronaut time. These devices must function in microgravity where liq./gas phase sepn. is not guaranteed. Remediation of contaminated systems has historically been achieved using higher disinfectant concns. However, potential threats to crew health and the resistance of **bacterial** biofilms to **disinfectants** have limited the effectiveness of this approach. These and other concerns must be addressed as a new water recovery system aboard ISS is expected within the next four years and deep space missions are being designed.

CC 10-5 (Microbial, Algal, and Fungal Biochemistry)
ST **microorganism disinfection** spacecraft
IT Microorganism

Space vehicles
Sterilization and **Disinfection**
(**microbial** monitoring and **disinfection** aboard NASA spacecraft)

L26 ANSWER 2 OF 18 HCA COPYRIGHT 2004 ACS on STN
140:238418 Coolant circulating control unit of **fuel cell** system. Arai, Takayuki (Nissan Motor Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2004071331 A2 20040304, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-228544 20020806.
AB The device is characterized by being able to remove ions from coolant quickly and efficiently by adjusting the coolant flow ratio of the bypassed portion and the portion passing through an ion removal filter. While the elec. cond. of the coolant is below a preset value, the pump is controlled to supply a stack flow corresponding to the power generation quantity of the **fuel cell** stack and the **coolant filter** flow is controlled by a 3-way valve to make the cooling water pressure at the upstream of the ion filter below a preset limit. While the elec. cond. of the coolant is beyond the preset value, the pump is controlled to increase the filter flow to bring down the elec. cond.
IC ICM H01M008-04
ICS H01M008-10
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76
ST coolant circulating control unit **fuel cell** system
IT Coolants
Cooling
Fuel cells
Process control
(coolant circulating control unit of **fuel cell** system)

L26 ANSWER 3 OF 18 HCA COPYRIGHT 2004 ACS on STN
139:352709 **Fuel cell** system for power generation using hydrogen-rich gas and air without contaminating circulation water. Fukuda, Takashi (Nissan Motor Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003317754 A2 20031107, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-122122 20020424.
AB The **fuel cell** system having **fuel cell** for generating electricity by supplying H2-rich gas and air is provided with an air purifn. means, an air supplying system for supplying the purified air to the **fuel cell**, a means for storing water, a water circulation system for circulating the stored water, and a means for **circulating** the **purified** air through the water storing means.
IC ICM H01M008-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST power generation **fuel cell** hydrogen air
IT Air
Fuel cells
(**fuel cell** system for power generation using hydrogen-rich gas and air without contaminating circulation water)
IT Power
(generation; **fuel cell** system for power generation using hydrogen-rich gas and air without contaminating circulation water)
IT 1333-74-0, Hydrogen, uses 7732-18-5, Water, uses
(**fuel cell** system for power generation using hydrogen-rich gas and air without contaminating circulation water)

L26 ANSWER 4 OF 18 HCA COPYRIGHT 2004 ACS on STN
139:326122 **Fuel cell** system with liquid cooling device for performance improvement. Yang, Jefferson Ys; Cheng, Yaw-chung (USA). U.S. Pat. Appl. Publ. US 2003203258 A1 20031030, 11 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-417080 20030417. PRIORITY: TW 2002-91205611 20020424.
AB A **fuel cell** system includes a **fuel cell** stack, an air supply system including a blower for driving the air to the **fuel cell** stack and an air humidifier for humidifying the air supplied to the **fuel cell** stack, a hydrogen supply system including a hydrogen storage and a pressure regulating device, and a hydrogen recirculator for receiving excessive hydrogen from the **fuel cell** stack and forcing the hydrogen back into the **fuel cell** stack in order to induce a hydrogen flow inside the **fuel cell** stack, a coolant circulation system supplying low temp. coolant to the **fuel cell** stack for absorbing heat from the **fuel cell** stack and including a coolant reservoir in which the coolant is stored, a pump driving the circulation of the **coolant**, a **radiator** for removing heat from the high temp. coolant and converting the high temp. coolant into the low temp. coolant. The coolant reservoir includes a ventilation device for removing air bubbles from the coolant. The coolant circulation system includes a heat exchanger for transferring heat from the high temp. coolant to the hydrogen storage. A control circuit elec. controls the flow and pressure regulating device, the blower, the pump and the fan.
IC ICM H01M008-04
ICS H01M016-00
NCL 429025000; 429026000; 429009000; 429024000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 48
ST **fuel cell** system liq cooling device performance improvement
IT Antifreeze
Control apparatus
Coolants
Cooling apparatus
Electric vehicles
Fuel cells
Heat exchangers
Heat transfer
Pressure sensors
Radiators
Temperature sensors
(**fuel cell** system with liq. cooling device for performance improvement)
IT Ventilation, mechanical
(systems; **fuel cell** system with liq. cooling device for performance improvement)
IT 7732-18-5, Water, uses
(air humidification with; **fuel cell** system with liq. cooling device for performance improvement)
IT 107-21-1, Ethylene glycol, uses
(antifreeze; **fuel cell** system with liq. cooling device for performance improvement)
IT 1333-74-0P, Hydrogen, uses
(supply; **fuel cell** system with liq. cooling device for performance improvement)

L26 ANSWER 5 OF 18 HCA COPYRIGHT 2004 ACS on STN
137:235271 **Fuel cell** system and microorganism inhibiting method. Itou, Yasuyuki; Takekawa, Toshihiro (Nissan Motor Co., Ltd., Japan). U.S. Pat. Appl. Publ. US 2002132143 A1 20020919, 15 pp. (English). CODEN: USXXCO. APPLICATION: US 2002-82147 20020226. PRIORITY: JP 2001-71560 20010314.
AB A **fuel cell** system is provided with a **fuel cell**, a **fuel** gas supply line supplying fuel gas to the **fuel cell**, an oxidizing gas supply line supplying oxidizing gas to the **fuel cell**, a circulation line circulating fluid through at least one of the **fuel cells**, the **fuel** gas supply line and the oxidizing gas supply line, and a microorganism inhibiting unit located in the **circulation** line to execute **sterilization** so as to **sterilize** **microorganisms** present in the fluid. The microorganism inhibiting method is utilized in the **fuel cell** system of such a structure to **sterilize** the **microorganisms** present in the fluid in the midway of the

circulation line.
IC ICM H01M008-04
NCL 429002000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 10
ST **fuel cell** system microorganism inhibiting method
IT Sterilization and Disinfection
(app.; **fuel cell** system and microorganism inhibiting method)
IT Coolants
Fuel cells
Microorganism
(**fuel cell** system and microorganism inhibiting method)
IT UV radiation
(irradiator; **fuel cell** system and microorganism inhibiting method)

L26 ANSWER 6 OF 18 HCA COPYRIGHT 2004 ACS on STN
136:234798 **Fuel cell** assembly with protective housing and its operation. Bette, Willi; Mattejat, Arno (Siemens Aktiengesellschaft, Germany). PCT Int. Appl. WO 2002023657 A2 20020321, 16 pp. DESIGNATED STATES: W: CA, JP, RU, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2. APPLICATION: WO 2001-DE3366 20010903. PRIORITY: DE 2000-10045700 20000915.
AB A **fuel cell** assembly comprises a plurality of **fuel cells**, which are arranged in a protective housing to obtain a long service life. The internal zone, which is enclosed by the housing is connected on the gas side to a closed recirculation circuit. A plurality of gas purifn. elements like drying step, water storage tank, condenser within a cooling coil, reactors for the absorption of H2, and/or O2, and recombination catalyst, used for the reaction of O2 with H2 to H2O are placed in the circulation circuit. The gas inside of the protective housing is dried, and **purified** in the **circulation** circuit.
IC ICM H01M008-04
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **fuel cell** assembly protective housing
IT Fuel gas manufacturing
(**fuel cell** assembly with protective housing and its operation)
IT **Fuel cells**
(with protective housing and its operation)

L26 ANSWER 7 OF 18 HCA COPYRIGHT 2004 ACS on STN
135:277690 Apparatus for bathtub water **circulation** and

purification with production of hydrogen and oxygen for **fuel cell**. Ito, Yukio; Shiga, Hisashi; Matsumura, Norimi; Osugi, Kazuya; Yamamoto, Natsue (Sanyo Electric Co., Ltd., Japan; Tottori Sanyo Electric Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 2001276830 A2 20011009, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-100871 20000403.

AB The app. includes a pump for circulating the bathtub water through a circulation loop, a filtration device; a heater; and an electrolysis disinfection device arranged in the loop for filtration of the water at set temp., and electrolysis of chlorides in water by electrodes to produce H2 and O2 for supplying to **fuel cell**.

IC ICM C02F001-46
ICS A47K003-00; C02F001-463; C02F001-465; C02F001-50; C02F009-00; H01M008-00; H01M008-06; H01M008-10

CC 61-5 (Water)
Section cross-reference(s): 52

ST bathtub water purifn electrolysis **fuel cell**

IT Bathtubs
Fuel cells
Pumps
(app. for bathtub water **circulation** and **purifn**. with prodn. of hydrogen and oxygen for **fuel cell**)

IT Chlorides, processes
(app. for bathtub water **circulation** and **purifn**. with prodn. of hydrogen and oxygen for **fuel cell**)

IT Water purification
(app.; app. for bathtub water **circulation** and **purifn.** with prodn. of hydrogen and oxygen for **fuel cell**)

IT Water purification
(electrolysis; app. for bathtub water **circulation** and **purifn.** with prodn. of hydrogen and oxygen for **fuel cell**)

IT 1333-74-0, Hydrogen, formation (nonpreparative) 7782-44-7, Oxygen, formation (nonpreparative)
(app. for bathtub water **circulation** and **purifn**. with prodn. of hydrogen and oxygen for **fuel cell**)

L26 ANSWER 8 OF 18 HCA COPYRIGHT 2004 ACS on STN
133:323988 Temperature control device for fuel gas in a **fuel cell** system. Ogawa, Takayuki; Okamoto, Hideo; Takase, Hidehiko (Honda Giken Kogyo K.K., Japan). Ger. Offen. DE 10021045 A1 20001109, 14 pp. (German). CODEN: GWXXBX. APPLICATION: DE 2000-10021045 20000428. PRIORITY: JP 1999-123349 19990430.

AB A temp. control system is disclosed for control of a fuel gas of a

fuel cell comprising a **fuel** reformer to reform hydrocarbon fuel into a reform gas contg. mainly hydrogen, and a CO separator for removing CO in the reform gas; where the reformed fuel gas is supplied to the **fuel cell**. The temp. control system comprises at least one heat exchanger, which exchanges the heat between the fuel gas and a cooling agent and is arranged at an inlet side and/or a discharge side of the CO separator; a radiator; a thermostat connected with the radiator as well as the radiator bypass channel surrounding the radiator whereby the thermostat is operated by the cooling agent at a pre-detd. temp. to decrease the flow of the **coolant** from the **radiator** if the temp. of the coolant is lower than a predetd. value and to increase the flow of the cooling agent if the temp. is higher than the pre-detd. value; a thermostat bypass valve connected to the radiator and the heat exchanger; a control unit which grasps the temp. of fuel gases and/or cooling agent and controls the thermostat bypass valve based on the grasped temp. to open the thermostat bypass control valve if the grasped temp. is higher than a second predetd. temp., and to close the thermostat bypass valve if the grasped temp. is lower than the second predetd. temp.

IC ICM H01M008-02
ICS H01M008-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **fuel cell** system temp control device

IT **Fuel cells**
(temp. control device for fuel gas in a **fuel cell** system)

L26 ANSWER 9 OF 18 HCA COPYRIGHT 2004 ACS on STN

128:63918 Water cooled **fuel cell** power plants.
Ikeda, Motokazu; Ichihashi, Tatsuya; Ouchi, Takashi; Fukayama, Harumi; Fujii, Masataka (Tokyo Gas Co., Ltd., Japan; Toho Gas K. K.; Fuji Electric Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 09306524 A2 19971128 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-112880 19960508.

AB The power plants have cooling plates inserted in **fuel cell** stacks, a means for circulating cooling water to cooling pipes embedded in the cooling plates, a means for recovering condensate from waste gases from the **fuel cell** and reformer, a tank for storing a mixt. of the recovered condensate and water for a supplementing means, and a means for purifying the mixed water and supplying the purified water to the cooling water **circulating** means; where water **purifying** means has a Cu ion disinfection device.

IC ICM H01M008-04
ICS H01M008-04; C02F001-50

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **fuel cell** power plant cooling water; cooling water copper disinfection **fuel cell**

IT **Fuel cells**
(cooling water circulation systems contg. copper ion disinfection means for **fuel cell** power plants)

IT Water **purification**
(**disinfection**; cooling water **circulation** systems contg. copper ion disinfection means for **fuel cell** power plants)

IT 7440-50-8, Copper, biological studies
(cooling water circulation systems contg. copper ion disinfection means for **fuel cell** power plants)

L26 ANSWER 10 OF 18 HCA COPYRIGHT 2004 ACS on STN

128:63917 Water cooled **fuel cell** power plants.
Ikeda, Genichi; Iwasa, Nobuhiro; Ichihashi, Tatsuya; Ouchi, Takashi; Fukayama, Harumi; Fujii, Masataka (Tokyo Gas Co., Ltd., Japan; Osaka Gas Co., Ltd.; Toho Gas K. K.; Fuji Electric Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 09306523 A2 19971128 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-112879 19960508.

AB The power plants have a means for circulating a low elec. cond. cooling water for the **fuel cell** cooling plates, a means for recovering condensate from waste gases from the **fuel cell** and reformer, a tank for storing a mixt. of the recovered condensate and water for a supplementing means, and a means for purifying the mixed water and supplying the purified water to the cooling water circulating means; where water supplementing means has a disinfection device. The disinfection device may be an ion exchanger or a heated filter.

IC ICM H01M008-04
ICS H01M008-04; C02F001-02; C02F001-42; C02F009-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **fuel cell** power plant cooling water; cooling water system **fuel cell**; water purifn cooling system **fuel cell**

IT Water purification
(disinfection; structure of cooling water **circulation** and **disinfection** systems for **fuel cell** power plants)

IT **Fuel cells**
(structure of cooling water **circulation** and **disinfection** systems for **fuel cell** power plants)

L26 ANSWER 11 OF 18 HCA COPYRIGHT 2004 ACS on STN

117:2900 A proposed source of electromagnetic radiation from biological systems. Gutmann, Felix (Sch. Chem., Macquarie Univ., 2109, Australia). Applied Physics Communications, 11(2-3), 205-22

(English) 1992. CODEN: APCODQ. ISSN: 0277-9374.

AB It has been proposed (Bockris, J.O'M, et al. 1985) that at least part of the aerobic energy transduction processes involve electrochem. **fuel-cell**-like reactions viz. O2 + 4 H+ + 4c- → H2O at the cathode and 2 NADH+ → 2 NAD + 2 H+ + 4 e- at the anode the reaction site being at integral, trans-membrane proteins in the inner mitochondrial membrane. It is now shown that the electrochem. redn. of one mol. of fuel at a single electrode site assocd. with the transient of one electron through the protein, produces an oscillating dipole moment which emits electromagnetic radiation in the microwave and higher frequency ranges into the space between the inner and outer mitochondrial membranes which act like waveguide resonators. Some of the exptl. evidence for these radiations is reviewed.

CC 6-1 (General Biochemistry)

IT Animal respiration
Microorganism respiration
Plant respiration
(electromagnetic **radiation** in)

L26 ANSWER 12 OF 18 HCA COPYRIGHT 2004 ACS on STN

116:135528 Performance-oriented packaging standards; changes to classification, hazard communication, packaging and handling requirements based on UN standards and agency initiative. (United States Dept. of Transportation, Washington, DC, 20590-0001, USA). Federal Register, 55(246), 52402-729 (English) 21 Dec 1990. CODEN: FEREAC. ISSN: 0097-6326.

AB The hazardous materials regulations under the Federal Hazardous Materials Transportation Act are revised based on the United Nations recommendations on the transport of dangerous goods. The regulations cover the classification of materials, packaging requirements, and package marking, labeling, and shipping documentation, as well as transportation modes and handling, and incident reporting. Performance-oriented stds. are adopted for packaging for bulk and nonbulk transportation, and SI units of measurement generally replace US customary units. Hazardous material descriptions and proper shipping names are tabulated together with hazard class, identification nos., packing group, label required, special provisions, packaging authorizations, quantity limitations, and vessel stowage requirements.

CC 59-6 (Air Pollution and Industrial Hygiene)

IT Adhesives
Alcoholic beverages
Ammunition
Antifreeze substances
Bactericides, Disinfectants, and **Antiseptics**
Batteries, primary

Blasting gelatin
Bombs (explosives)
Carbon paper
Cartridges
Castor bean
Coating materials
Corrosive substances
Cotton
Creosote
Detonators
Dyes
Dynamite
Electric fuses
Exothermic materials
Explosives
Flavoring materials
Flue dust
Fuel cells
Fuel oil
Fuels, diesel
Fuels, jet aircraft
Fusel oil
Fuses, explosives
Gas oils
Hay
Herbicides
Igniters and Lighters
Insecticides
Lacrimators
Magnetic substances
Matches
Oxidizing agents
Perfumes
Pesticides
Petroleum products
Pharmaceuticals
Photoelectric devices
Poisons
Primers, explosive
Projectiles
Pyrophoric substances
Pyrotechnic compositions
Radioactive substances
Refrigerating apparatus
Rockets
Shale oils
Solvent naphtha
Sprays

Straw
Textiles
Thermoelectric devices
Torpedoes (weapons)
Turpentine
Wood preservatives
(packaging and transport of, stds. for)

L26 ANSWER 13 OF 18 HCA COPYRIGHT 2004 ACS on STN
111:198539 Water-circulating apparatus for **fuel-cell** power plant. (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 01132063 A2 19890524 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-259235 19881014. PRIORITY: US 1987-108527 19871015.

AB A closed-loop water-circulating app., for removing NH3 and other impurities from a reformed H-rich fuel gas in a **fuel-cell** power plant, includes, a cooler, a means to conduct the fuel gas to the cooler, a means to conduct a cooling water to the cooler to contact the gas and to remove impurities from the gas, means to remove the impurity-loaded cooling water from the cooler, a means to mix the impurity-loaded cooling water with steam to remove the impurities, a means to recover the purified cooling water, and means to cool the cooling water to its operation temp. and recycling it to the cooler.

IC ICM H01M008-06
ICS B01D053-14

ICA B01D053-34

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **fuel cell** power plant; water **circulating** app fuel **purifn**

IT **Fuel cells**
(power plants, **fuel** purifn. in, closed-loop water-circulating systems for)

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L27 ANSWER 1 OF 26 HCA COPYRIGHT 2004 ACS on STN
139:199997 Ion removing filter and cooling system for **fuel cell**. Suzuki, Koji (Toyo Roki Seizo K. K., Japan). Jpn. Kokai Tokkyo Koho JP 2003249249 A2 20030905, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-46589 20020222.

AB The ion exchanger filter, installed on cooling water loop of a **fuel cell**, has a cooling water flow rate control valve, which adjusts the flow to a higher rate at a lower cooling water temp. and to a lower flow rate at a higher water temp. The cooling system has a cooling water loop contg. a radiator, a pipe bypassing the radiator, and the ion exchanger filter installed on

the bypass pipe.
IC ICM H01M008-04
ICS H01M008-10
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 61
ST **fuel cell** cooling water temp based ion exchanger filter
IT Filters
Water purification
(ion exchange; ion exchanger **filters** with temp. based **flow** rate control for **fuel cell** cooling systems)
IT **Fuel cells**
(ion exchanger **filters** with temp. based **flow** rate control for **fuel cell** cooling systems)

L27 ANSWER 2 OF 26 HCA COPYRIGHT 2004 ACS on STN
138:356276 Method and apparatus for filtering a **fuel cell** reactant stream of particulate and vapor contaminants.
Traver, Robert S. (Plug Power Inc., USA). U.S. Pat. Appl. Publ. US 2003096152 A1 20030522, 6 pp. (English). CODEN: USXXCO.
APPLICATION: US 2002-264539 20021004. PRIORITY: US 2001-PV336508 20011031.
AB The invention provides filtration systems and assocd. methods for filtering a **fuel cell** reactant stream of particulate and vapor contaminants. In one embodiment, the invention provides a reactant filtration system for a **fuel cell**, including a first filter having a first inlet and a first outlet, and a second filter having a second inlet and a second outlet. The first filter includes a textile particulate filter, and the second filter includes an activated carbon material. The first and second filters are coupled such that the first inlet is adapted to receive a flow of reactant, which is **flowed** through the first **filter** to the first outlet and then to the second inlet, through the second filter and then through the second outlet, which is coupled to an electrode chamber of a **fuel cell**.
IC ICM H01M008-04
ICS H01M008-10
NCL 429034000; 429013000; 429030000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **fuel cell** reactant stream filtration particulate vapor contaminant
IT Textiles
(filter; method and app. for **filtering fuel cell** reactant **stream** of particulate and vapor contaminants)
IT Air purification

(filtration; method and app. for **filtering fuel cell** reactant **stream** of particulate and vapor contaminants)

IT Synthetic fibers
(hydrophobic; method and app. for **filtering fuel cell** reactant **stream** of particulate and vapor contaminants)

IT Filters
Filtration
Solid state **fuel cells**
(method and app. for **filtering fuel cell** reactant **stream** of particulate and vapor contaminants)

IT Polypropene fibers, uses
(method and app. for **filtering fuel cell** reactant **stream** of particulate and vapor contaminants)

IT 7440-44-0, Activated carbon, uses
(activated; method and app. for **filtering fuel cell** reactant **stream** of particulate and vapor contaminants)

IT 109-66-0, n-Pentane, processes 7446-09-5, Sulfur dioxide, processes 7783-06-4, Hydrogen sulfide, processes 10102-44-0, Nitrogen dioxide, processes
(method and app. for **filtering fuel cell** reactant **stream** of particulate and vapor contaminants)

L27 ANSWER 3 OF 26 HCA COPYRIGHT 2004 ACS on STN

138:306162 Hydrogen-permeable metal membrane and hydrogen purification assemblies containing the same. Edlund, David J.; Pledger, William A.; Studebaker, Todd (Idatech, LLC, USA). U.S. US 6547858 B1 20030415, 15 pp., Cont.-in-part of U.S. 6,152,995. (English). CODEN: USXXAM. APPLICATION: US 2000-618866 20000719. PRIORITY: US 1999-274154 19990322; US 2000-PV191891 20000323.

AB A hydrogen-permeable metal membrane with increased hydrogen flux compared to conventional metal membranes enables a greater throughput of purified hydrogen without sacrificing selectivity. The membrane is prepd. with at least one etching step in which a controlled vol. of etchant is used to selectively remove material from the membrane's surface. Methods for repairing holes or other defects in the membrane are also disclosed. The invention also includes a membrane module adapted for use in **purifying** hydrogen **streams**, such as those produced by fuel processors.

IC ICM B01D053-22
ICS B01D067-00

NCL 096004000; 095055000; 095056000; 096011000; 216053000

CC 49-1 (Industrial Inorganic Chemicals)
ST hydrogen purifn membrane **fuel cell**
IT **Fuel cells**
(hydrogen-permeable metal membrane and hydrogen purifn. assemblies contg. the same for use in **fuel cells**)
IT Membranes, nonbiological
(metal; hydrogen-permeable metal membrane and hydrogen purifn. assemblies contg. the same for use in **fuel cells**)
IT Screens (mesh)
(support; hydrogen-permeable metal membrane and hydrogen purifn. assemblies contg. the same for use in **fuel cells**)
IT Palladium alloy, base
(membrane; hydrogen-permeable metal membrane and hydrogen purifn. assemblies contg. the same for use in **fuel cells**)
IT 1333-74-0P, Hydrogen, preparation
(hydrogen-permeable metal membrane and hydrogen purifn. assemblies contg. the same for use in **fuel cells**)

L27 ANSWER 4 OF 26 HCA COPYRIGHT 2004 ACS on STN
138:240696 Flow reactor and reaction flow guidance used for the treatment of hydrogen-rich gas mixtures for **fuel cells**. Kahlich, Michael; Hackl, Thomas; Mayer, Joerg (Volkswagen AG, Germany). Ger. Offen. DE 10144681 A1 20030327, 8 pp. (German). CODEN: GWXXBX. APPLICATION: DE 2001-10144681 20010911.
AB The invention concerns a flow reactor and a procedure for the reaction medium guidance in the flow reactor, whereby (A) a starting material flow is fed through a catalyst-coated catalyst unit, and (B) a reactant flow is supplied to the catalyst unit via a supply unit, whereby the supplied reactant flow is subjected to an adjusting element of the supply unit movable in relation to the catalyst unit. The flow reactor is suitable for the conversion of liq., or gaseous reaction media, e.g., for the removal of CO from H2-rich gas mixts. by selective CO-oxidn., which is applied for the treatment of H2-rich gas mixts. for **fuel cells**.
IC ICM B01J008-00
ICS C01B003-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 47
ST **flow** reactor hydrogen **purifn fuel cell**; catalytic flow reactor carbon monoxide removal
IT **Fuel cells**
(flow reactor and reaction flow guidance used for the treatment

of hydrogen-rich gas mixts. for)
IT Reactors
(flow; and reaction flow guidance used for the treatment of hydrogen-rich gas mixts. for **fuel cells**)
IT Fuel gas manufacturing
(partial oxidn.; flow reactor and reaction flow guidance used for the treatment of hydrogen-rich gas mixts. for **fuel cells**)
IT 1333-74-0P, Hydrogen, preparation
(flow reactor and reaction flow guidance used for the treatment of hydrogen-rich gas mixts. for **fuel cells**)
IT 630-08-0, Carbon monoxide, processes
(flow reactor and reaction flow guidance used for the treatment of hydrogen-rich gas mixts. for **fuel cells**)

L27 ANSWER 5 OF 26 HCA COPYRIGHT 2004 ACS on STN
138:226011 Replaceable flow-through capacitors for removing charged species from liquids. Shiue, Lih-Ren; Shiue, Chia-Chann; Wang, S-Yen; Hsieh, Fei-Chen; Lee, Chin-Hui; Lo, Wan-Ting; Hsieh, Yu-His (Taiwan). Eur. Pat. Appl. EP 1291323 A1 20030312, 15 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-121572 20010910.
AB A free-standing flow-through capacitor (FTC) is constructed by concentrically winding two electrodes and two dividers into a hollow-center roll. A liq.-feeding pipe is inserted to the central opening for delivering fluids to the FTC. Nanoparticles of hydrated iron compd. with Fe3O4 as the main component or its composite powders are used as the active materials for the electrodes. With channels created by the dividers assembled in the roll, fluids injected from the feed pipe are confined inside the FTC, and flow outwardly and transversely through the entire length of the electrodes. Under an application of a low DC voltage to the electrodes, charged species are adsorbed and removed from the treated liqs. as soon as they are in contact with the electrodes. Capacitive deionization using FTC of the present invention is applicable to waste-**streams** redn., water **purifn.** and desalination at low costs and easy operation.
IC ICM C02F001-46
CC 60-2 (Waste Treatment and Disposal)
Section cross-reference(s): 61
IT Wastewater treatment
Water **purification**
(app.; replaceable **flow**-through capacitors for removing charged species from liqs.)
IT Wastewater treatment
Water **purification**
(deionization; replaceable **flow**-through capacitors for

removing charged species from liqs.)
IT Water **purification**
(desalination; replaceable **flow**-through capacitors for removing charged species from liqs.)
IT Wastewater treatment
Water **purification**
(electrochem.; replaceable **flow**-through capacitors for removing charged species from liqs.)
IT Capacitors
Electrodes
Electrophoretic deposition
Fuel cells
Liquids
Primary batteries
Secondary batteries
Solar cells
(replaceable flow-through capacitors for removing charged species from liqs.)

L27 ANSWER 6 OF 26 HCA COPYRIGHT 2004 ACS on STN
138:206983 Apparatus for **purification** of gas **flows**.
Duelk, Christian (DaimlerChrysler AG, Germany). Ger. Offen. DE 10141192 A1 20030313, 8 pp. (German). CODEN: GWXXBX. APPLICATION: DE 2001-10141192 20010822.
AB An app. is disclosed for **purifn.** of gas **flows** contg. ≥1 exothermically convertible gas component(s). Typically, the system is suitable for desulfurization of a H2-rich reforming gas, which is formed during reforming of liq. or gaseous hydrocarbons. The gas components H2, CO, CH4, and/or residual hydrocarbons are exothermically converted with addn. of air to heat an adsorbent contained in the reactor to a required desulfurization temp. An oxidn. catalyst is dispersed in the adsorbent bed. S compds. (e.g., H2S, COS) are adsorbed to obtain the high-purity reformate or H2 (after the water gas shift reaction) which is suitable for **fuel cells**.
IC ICM B01D053-00
ICS C01B003-50
CC 47-3 (Apparatus and Plant Equipment)
Section cross-reference(s): 49, 52
ST gas **flow purifn** app; reforming gas desulfurization adsorbent heating exothermic reaction
IT **Fuel cells**
(desulfurization of reforming gas or hydrogen by adsorption with adsorbent heated by exothermic reaction for)
IT Reactors
(for **purifn.** of gas **flows**)

L27 ANSWER 7 OF 26 HCA COPYRIGHT 2004 ACS on STN

137:281804 Catalytic **purification** of a hydrogen **flow** by carbon monoxide removal in a tubular mini reactor. (Mir-Chem GmbH, Germany). Ger. Offen. DE 10118618 A1 20021017, 4 pp. (German). CODEN: GWXXBX. APPLICATION: DE 2001-10118618 20010412.

AB The process for the catalytic **purifn.** of a H2 **flow**, esp. the removal of CO from a H2 fuel gas flow is carried out in a mini-reactor plant with pre-mixing, whereby a H2/CO-mixt. is fed into several reactor chambers (R1-Rn) of the catalytic, tubular reactor. Thereby moistened air, and a H2/CO gas mixt. are supplied via gas inlets into the reactor chambers. The CO is removed from the H2 flow by catalytic oxidn. of CO to CO2, whereby a pure H2 flow is obtained. The **purified** H2 **flow** with a CO-content of <100 ppm is then used as fuel in PEM-**fuel cells.**

IC ICM C01B003-54

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 48

ST hydrogen fuel catalytic purifn mini reactor; carbon monoxide removal hydrogen **fuel cell**; catalytic oxidn carbon monoxide tubular reactor

IT **Fuel cells**
(catalytic **purifn.** of hydrogen **flows** by carbon monoxide removal in tubular mini reactors used in)

IT Fuel gas manufacturing
(purifn.; catalytic **purifn.** of hydrogen **flows** by carbon monoxide removal in tubular mini reactors)

IT Reactors
(tubular, catalytic; catalytic **purifn.** of hydrogen **flows** by carbon monoxide removal in)

IT 1333-74-0P, Hydrogen, preparation
(catalytic **purifn.** of hydrogen **flows** by carbon monoxide removal in tubular mini reactors)

IT 630-08-0, Carbon monoxide, processes
(catalytic **purifn.** of hydrogen **flows** by carbon monoxide removal in tubular mini reactors)

L27 ANSWER 8 OF 26 HCA COPYRIGHT 2004 ACS on STN

137:204030 **Fuel cell** system having a replaceable getter element for purifying the fuel supply. Pratt, Steven D.; Muthuswamy, Sivakumar; Kelley, Ronald J.; Pennisi, Robert W. (Motorola, Inc., USA). U.S. Pat. Appl. Publ. US 2002127458 A1 20020912, 5 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-803190 20010312.

AB Oxides of carbon and other impurities are removed from a hydrogen fuel supply stream for a **fuel cell.** A getter element sufficient for chemisorbing the oxides of carbon from the hydrogen is removably connected to the **fuel cell** anode side. The fuel stream is passed through the getter element so

as to chemisorb the oxides of carbon onto the getter, thereby providing a **purified stream** of hydrogen to the **fuel cell** anode. The getter is removed from the **fuel cell** when the getter is spent and replaced with a fresh getter.

IC ICM H01M008-04
ICS H01M008-06
NCL 429034000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **fuel cell** system replaceable getter fuel supply purifn
IT Chemisorption
Fuel cells
Getters
Physisorption
(**fuel cell** system having replaceable getter element for purifying fuel supply)
IT Reforming apparatus
(microreformer; **fuel cell** system having replaceable getter element for purifying fuel supply)
IT Filtration
(size-exclusion; **fuel cell** system having replaceable getter element for purifying fuel supply)
IT 67-56-1, Methanol, processes
(**fuel cell** system having replaceable getter element for purifying fuel supply)
IT 1333-74-0P, Hydrogen, uses
(**fuel cell** system having replaceable getter element for purifying fuel supply)
IT 630-08-0, Carbon monoxide, processes
(**fuel cell** system having replaceable getter element for purifying fuel supply)

L27 ANSWER 9 OF 26 HCA COPYRIGHT 2004 ACS on STN
137:172394 Fuel processor apparatus and control system. Warren, David W.; Donahue, Michael B. (Harvest Energy Technology, Inc., USA). PCT Int. Appl. WO 2002062463 A1 20020815, 19 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US50298 20011019. PRIORITY: US 2000-696575 20001027.

AB A fuel processor app. comprising a catalytic tubular reactor is

heated using an IR radiant burner to provide the endothermic heat of reaction needed to reform a mixt. of hydrocarbon and steam for the prodn. of a hydrogen-rich gas stream. The hydrogen-rich gas **stream** is further **purified** using a sequence of catalytic steps that is fed to a **fuel cell** whereupon a portion of the hydrogen contained in the gas stream is consumed for the prodn. of electricity by electrochem. reaction with oxygen. An unused portion of the **purified** hydrogen-rich gas **stream** exits the **fuel cell** stack and is combusted in the IR radiant burner. A **fuel cell** control system rapidly responds to a variable **fuel cell** elec. demand by adjusting the feed of hydrocarbon to the catalytic tubular reactor to maintain the surface temp. of the IR radiant burner within defined limits.

IC ICM B01J008-00
ICS B01J008-02; B01J008-04; B01J008-06; F28D007-00; F28D021-00; C10J001-00; C10J003-20

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST hydrogen manuf **fuel cell** process control

IT Electricity
Fuel cells
Process control
Steam
(**fuel** processor app. and control system for manuf. and use of hydrogen in **fuel cells**)

IT Hydrocarbons, reactions
(fuel processor app. and control system for manuf. and use of hydrogen in **fuel cells**)

IT Reactors
(tubular, catalytic; fuel processor app. and control system for manuf. and use of hydrogen in **fuel cells**)

IT 1333-74-0P, Hydrogen, preparation
(fuel processor app. and control system for manuf. and use of hydrogen in **fuel cells**)

L27 ANSWER 10 OF 26 HCA COPYRIGHT 2004 ACS on STN

137:81362 Interdigitated heat- and mass-transfer device for **fuel cell** power plant. Breault, Richard D. (UTC Fuel Cells, LLC, USA). U.S. US 6416892 B1 20020709, 14 pp. (English). CODEN: USXXAM. APPLICATION: US 2000-627989 20000728.

AB An heat- and mass-exchange device, with interdigitating components for better heat transfer, is described for a **fuel cell** power plant, in which the device is in fluid communication with both an oxidant stream entering the **fuel cell** and an exhaust stream (contg. water) leaving the **fuel cell**. The device includes discontinuous oxidant entry and exit channels, and discontinuous exhaust entry and exit channels, which provides for direct transfer of mass and heat

from the exhaust stream to the oxidant stream. In addn., loss of liq. through the exhaust stream from the power plant is decreased, dust entering the plant is the oxidant **stream** is **filtered**, and noise from the **fuel cells** is dampened.

IC ICM H01M008-04
NCL 429013000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 47
ST **fuel cell** heat mass transfer device; water loss control **fuel cell**; interdigitated heat mass transfer device **fuel cell**
IT Sound and Ultrasound
(damping of; interdigitated heat- and mass-transfer device for **fuel cell** power plant)
IT **Fuel cells**
Heat exchangers
Heat transfer
Mass transfer
(interdigitated heat- and mass-transfer device for **fuel cell** power plant)
IT 7732-18-5, Water, processes
(mass exchange of, for fluid loss control; interdigitated heat- and mass-transfer device for **fuel cell** power plant)

L27 ANSWER 11 OF 26 HCA COPYRIGHT 2004 ACS on STN
137:10147 Reactor for purification of exhaust gas and educt flows. Gallinger, Martin; Hackl, Thomas; Mayer, Joerg (Volkswagen A.-G., Germany). Ger. Offen. DE 10061662 A1 20020613, 4 pp. (German). CODEN: GWXXBX. APPLICATION: DE 2000-10061662 20001211.
AB The invention concerns a catalytic reactor, in particular for an internal combustion engine for treatment of the exhaust gas. The reactor comprises 2 sepd. reactor vols., whereby an educt feeding line is placed upstream. The reactor process comprises a catalytic reaction, esp. the exhaust gas catalysis in an internal combustion engine for the educt **flow purifn.** Furthermore the reactor is used for the **purifn.** of a gas **flow** from the reforming process in **fuel cells.** The reactor process is presented as adsorption process for educt **flow purifn.**, esp. suitable for the adsorption of NOx, and/or hydrocarbons.
IC ICM F01N003-24
CC 59-3 (Air Pollution and Industrial Hygiene)
ST catalytic reactor exhaust gas purifn; reactor reformer gas purifn **fuel cell**; exhaust gas adsorption catalyst reactor
IT Exhaust gas catalytic converters
Exhaust gases (engine)

Fuel cells
Reduction catalysts
(reactor for purifn. of exhaust gas and educt flows)

L27 ANSWER 12 OF 26 HCA COPYRIGHT 2004 ACS on STN
136:343323 Systems and processes for providing hydrogen to **fuel cells**. Keefer, Bowie G.; Sawada, James A.; Johannes, Erik P.; Roy, Surajit; Brown, Michael J. (Questair Technologies Inc., Can.). PCT Int. Appl. WO 2002035623 A2 20020502, 55 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-CA1523 20011026. PRIORITY: CA 2000-2324699 20001027; CA 2000-2324702 20001027.

AB A process and system for providing a hydrogen-contg. gas stream to a **fuel cell** anode that includes providing a hydrogen-contg. gas stream that includes carbon monoxide, introducing the hydrogen-contg. gas stream into a pressure swing adsorption module that includes at least one carbon monoxide-selective adsorbent to produce a **purified** hydrogen-contg. gas **stream**, and introducing the **purified** hydrogen-contg. gas **stream** to the **fuel cell** anode. The pressure swing adsorption module can also include a second adsorbent and/or catalyst. Also disclosed is a **fuel cell** system coupled to an internal combustion engine and a **fuel cell** system that utilizes **fuel cell** waste heat for vaporizing a hydrocarbon/water mixt.

IC ICM H01M008-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 48

ST **fuel cell** hydrogen supply system process

IT Adsorbents
(CO-selective; systems and processes for providing hydrogen to **fuel cells**)

IT Chabazite-type zeolites
(Ca-exchanged; systems and processes for providing hydrogen to **fuel cells**)

IT X zeolites
(CaX; systems and processes for providing hydrogen to **fuel cells**)

IT Chabazite-type zeolites
(Li-exchanged; systems and processes for providing hydrogen to

fuel cells)
IT Chabazite-type zeolites
(Sr-exchanged; systems and processes for providing hydrogen to **fuel cells**)
IT Charcoal
(activated; systems and processes for providing hydrogen to **fuel cells**)
IT Fuel gas manufacturing
(partial redn.; systems and processes for providing hydrogen to **fuel cells**)
IT **Fuel cells**
(polymer electrolyte membrane; systems and processes for providing hydrogen to **fuel cells**)
IT Adsorption
(pressure-swing; systems and processes for providing hydrogen to **fuel cells**)
IT Fuel gas manufacturing
(reforming; systems and processes for providing hydrogen to **fuel cells**)
IT Combustion engines
Steam reforming catalysts
Water gas shift reaction catalysts
(systems and processes for providing hydrogen to **fuel cells**)
IT Hydrocarbons, uses
(systems and processes for providing hydrogen to **fuel cells**)
IT X zeolites
Zeolites (synthetic), uses
(systems and processes for providing hydrogen to **fuel cells**)
IT Carbonyl complexes
(transition metal; systems and processes for providing hydrogen to **fuel cells**)
IT 1314-13-2, Zinca, uses 7440-50-8, Copper, uses
(systems and processes for providing hydrogen to **fuel cells**)
IT 67-56-1, Methanol, uses 74-82-8, Methane, uses
(systems and processes for providing hydrogen to **fuel cells**)
IT 630-08-0, Carbon monoxide, processes
(systems and processes for providing hydrogen to **fuel cells**)
IT 1333-74-0P, Hydrogen, uses
(systems and processes for providing hydrogen to **fuel cells**)
IT 124-38-9, Carbon dioxide, processes
(systems and processes for providing hydrogen to **fuel**

cells)
IT 64-17-5, Ethanol, uses
(systems and processes for providing hydrogen to **fuel cells**)

L27 ANSWER 13 OF 26 HCA COPYRIGHT 2004 ACS on STN
135:229405 Fuel processor for producing hydrogen-rich gas for **fuel cell** systems. Edlund, David J.; Pledger, William A.; Studebaker, Todd (Idatech, L.L.C., USA). PCT Int. Appl. WO 2001068514 A2 20010920, 45 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US7656 20010309. PRIORITY: US 2000-PV188993 20000313; US 2001-802361 20010308.
AB Fuel processors and fuel processing and **fuel cell** systems contg. the same are disclosed. The fuel processor is adapted to produce a product hydrogen stream from a feed stream, such as at least one of water and a carbon-contg. feedstock, which may be one or more hydrocarbons or alcs. In some embodiments, the fuel processor is a steam reformer contg. a sepn. region in which the reformate **stream** is **purified** using a pressure-driven sepn. process. In some embodiments, the fuel processor includes a filter assembly adapted to remove particulates from the reformate stream prior to delivery to the sepn. region. In some embodiments, the fuel processor contains one or more cartridge-based components to facilitate easier removal and replacement of these components. In some embodiments, the fuel processor includes an air delivery system adapted to regulate the operating temp. of the fuel processor.
IC ICM C01B
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST **fuel cell** system hydrogen rich fuel processor
IT Membranes, nonbiological
(H-selective; fuel processor for producing hydrogen-rich gas for **fuel cell** systems)
IT Automobiles
Fuel cells
Methanation catalysts
Reforming catalysts
(**fuel** processor for producing hydrogen-rich gas for **fuel cell** systems)

IT Fuel gas manufacturing
(reforming; fuel processor for producing hydrogen-rich gas for **fuel cell** systems)
IT Safety devices
(signaling app.; fuel processor for producing hydrogen-rich gas for **fuel cell** systems)
IT 1333-74-0P, Hydrogen, uses
(fuel processor for producing hydrogen-rich gas for **fuel cell** systems)

L27 ANSWER 14 OF 26 HCA COPYRIGHT 2004 ACS on STN
133:76750 Hydrogen purifier for use in combination with a **fuel cell**. Hoogers, Gregor (Johnson Matthey Public Ltd. Co., UK). Brit. UK Pat. Appl. GB 2341561 A1 20000322, 21 pp. (English). CODEN: BAXXDU. APPLICATION: GB 1998-20181 19980917.
AB An app. for **purifying** an impure hydrogen **stream** has: a **purifn.** compartment for removing impurities from the impure hydrogen stream; an inlet enabling the impure hydrogen **stream** to enter the **purifn.** compartment; and an outlet enabling the **purified** hydrogen **stream** to leave the **purifn.** compartment. The purifn. system has: means for detecting that impurities are entering or are about to enter the outlet; cleaning means for removing impurities from the purifn. compartment; and means for preventing the impure hydrogen stream from entering and/or leaving the inlet and/or outlet when the cleaning means is in use. Typical impurities are CO and H2S. The utility of this app. is in **fuel cells**.
IC ICM B01D053-86
ICS C01B003-50; H01M008-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **fuel cell** hydrogen purifier
IT Optical detectors
(IR; hydrogen purifier for use in combination with **fuel cell**)
IT Charcoal
Zeolites (synthetic), uses
(adsorbent; hydrogen purifier for use in combination with **fuel cell**)
IT Sensors
(catalytic; hydrogen purifier for use in combination with **fuel cell**)
IT Sensors
(electrochem.; hydrogen purifier for use in combination with **fuel cell**)
IT Catalysts
Electrode reaction
Fuel cells
Semiconductor gas sensors

(hydrogen purifier for use in combination with **fuel cell**)
IT Electric meters
(voltammeters; hydrogen purifier for use in combination with **fuel cell**)
IT 1333-74-0P, Hydrogen, preparation
(hydrogen purifier for use in combination with **fuel cell**)
IT 630-08-0, Carbon monoxide, analysis 7783-06-4, Hydrogen sulfide, analysis
(hydrogen purifier for use in combination with **fuel cell**)

L27 ANSWER 15 OF 26 HCA COPYRIGHT 2004 ACS on STN
132:281204 Heat exchanger for hydrogen-adsorption alloy. Suda, Seijiro (Hydrogen Energy Kenkyujo K. K., Japan). Jpn. Kokai Tokkyo Koho JP 2000111193 A2 20000418, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-284563 19981006.
AB The heat exchanger comprises plural corrugated plates which are mutually crossed and slant-intersected or parallel through the plate, means for the storage of hydrogen-adsorption alloy and pathways for heat-exchanging medium **flow, filter** plates on alloy-storage sides where hydrogen gas is introduced and exited, and entrance and exit for heat-exchanging medium which is connected to the above pathways. The heat exchangers have high-heat transfer performance and are light wt., and the process is used in the heat-exchanging of the hydrogen-adsorption alloy in the **fuel cells**, heat pumps, and hydrogen-driven automobiles.
IC ICM F25B017-12
ICS F28D020-00; C01B003-00
CC 49-1 (Industrial Inorganic Chemicals)

L27 ANSWER 16 OF 26 HCA COPYRIGHT 2004 ACS on STN
132:13908 Method and system for supplying hydrogen for use in **fuel cells**. Lapierre, Rene B.; Partridge, Randall D. (Mobil Oil Corporation, USA). PCT Int. Appl. WO 9965097 A1 19991216, 53 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US12737 19990608. PRIORITY: US 1998-88627 19980609.
AB The present invention provides a method and system for efficiently producing hydrogen that can be supplied to a **fuel**

cell. The method and system of the present invention produces hydrogen in a reforming reactor using a hydrocarbon stream and water vapor stream as reactants. The hydrogen produced is purified in a hydrogen sepg. membrane to form a retentate **stream** and **purified** hydrogen **stream**. The purified hydrogen can then be fed to a **fuel cell** where elec. energy is produced and a **fuel cell** exhaust stream contg. water vapor and oxygen-depleted air is emitted. In one embodiment of the present invention, a means and method are provided for recycling a portion of the retentate stream to the reforming reactor for increased hydrogen yields. In another embodiment, a combustor is provided for combusting a second portion of the retentate stream to provide heat to the reforming reaction or other reactants. In a preferred embodiment, the combustion is carried out in the presence of at least a portion of the oxygen-depleted air stream from the **fuel cell** . Thus, the system and method of the present invention advantageously uses products generated from the system to enhance the overall efficiency of the system.

IC ICM H01M008-06
ICS C01B003-34; C01B003-38; C01B003-50
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST hydrogen supply **fuel cell**
IT Steam reforming
(hydrocarbon; method and system for supplying hydrogen for use in **fuel cells**)
IT Membranes, nonbiological
Oxidation catalysts
(method and system for supplying hydrogen for use in **fuel cells**)
IT Noble metals
(method and system for supplying hydrogen for use in **fuel cells**)
IT Gasoline
(method and system for supplying hydrogen for use in **fuel cells**)
IT Hydrocarbons, reactions
(steam reforming; method and system for supplying hydrogen for use in **fuel cells**)
IT 39286-82-3
(membrane; method and system for supplying hydrogen for use in **fuel cells**)
IT 7440-06-4, Platinum, uses 11137-98-7, Magnesium aluminate
(method and system for supplying hydrogen for use in **fuel cells**)
IT 74-82-8P, Methane, preparation 124-38-9P, Carbon dioxide, preparation 630-08-0P, Carbon monoxide, preparation
(method and system for supplying hydrogen for use in **fuel**

cells)
IT 1333-74-0P, Hydrogen, uses
(method and system for supplying hydrogen for use in **fuel cells**)
IT 540-84-1, Isooctane
(steam reforming; method and system for supplying hydrogen for use in **fuel cells**)

L27 ANSWER 17 OF 26 HCA COPYRIGHT 2004 ACS on STN
131:202274 Process gas purification and **fuel cell** system. Woods, Richard R. (Hydrogen Burner Technology, Inc., USA). PCT Int. Appl. WO 9946032 A2 19990916, 40 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US5238 19990310. PRIORITY: US 1998-PV77733 19980312.
AB A module for sepg. a product from a mixed stream comprises a mixed stream chamber having inlet and outlet means and defining a first flow path for the mixed stream, a purge/product stream chamber having inlet and outlet means and defining a second flow path for a purge/product stream, the second flow path having a substantially countercurrent direction to that of the first flow path, and a membrane located between the mixed stream chamber and the purge/product stream chamber, the membrane being selectively permeable to the product. There is also disclosed a **fuel cell** system comprising a burner module for mixing and combusting a fuel and air mixt. to produce hydrogen rich fuel stream; a hydrogen **fuel cell** for producing power/energy using the hydrogen fuel produced by the burner module; a hydrogen purifn. module between the burner module and the **fuel cell** for extg. hydrogen fuel from the burner module for use in the **fuel cell** and that uses a purge gas to enhance purifn. module performance; hydrogen storage means for storing hydrogen fuel produced by the burner module and not immediately required by the **fuel cell**; and means for feeding stored hydrogen fuel from the storage means to the **fuel cell** when the hydrogen requirements of the **fuel cell** are greater than the amt. of hydrogen produced in the burner module.
IC ICM B01D053-22
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **fuel cell** process gas purifn; hydrogen purifn storage **fuel cell** system

IT Combustion apparatus
(catalytic; process gas purifn. and **fuel cell** system)
IT Hydrocarbons, processes
(chlorofluorocarbons, vapor; process gas purifn. and **fuel cell** system)
IT Hydrocarbons, processes
(fluoro, vapor; process gas purifn. and **fuel cell** system)
IT **Fuel cells**
Membranes, nonbiological
Water gas shift reaction
Water gas shift reaction catalysts
Water vapor
(process gas purifn. and **fuel cell** system)
IT Steam
(purge **stream**; process gas **purifn.** and **fuel cell** system)
IT Boilers
(steam, heat recovery; process gas purifn. and **fuel cell** system)
IT Refrigerants
(vapor; process gas purifn. and **fuel cell** system)
IT Alcohols, processes
(vapor; process gas purifn. and **fuel cell** system)
IT 1314-23-4, Zirconia, uses 7440-05-3, Palladium, uses
(membrane; process gas purifn. and **fuel cell** system)
IT 74-82-8P, Methane, preparation 124-38-9P, Carbon dioxide, preparation 7440-37-1P, Argon, preparation 7664-41-7P, Ammonia, preparation 7727-37-9P, Nitrogen, preparation 7782-44-7P, Oxygen, preparation
(process gas purifn. and **fuel cell** system)
IT 1333-74-0P, Hydrogen, uses
(process gas purifn. and **fuel cell** system)

L27 ANSWER 18 OF 26 HCA COPYRIGHT 2004 ACS on STN
129:348430 Electrochemical membrane separation of H2S from reducing gas streams. Robinson, Jeffrey S.; Smith, D. Scott; Winnick, Jack (Dept. of Chemical Engineering, Georgia Institute of Technology, Atlanta, GA, 30332, USA). AIChE Journal, 44(10), 2168-2174 (English) 1998. CODEN: AICEAC. ISSN: 0001-1541. Publisher: American Institute of Chemical Engineers.
AB An improved electrochem. membrane was tested with simulated coal gas having concns. from 25 to 4,500 ppm H2S. The process produces elemental hydrogen that enriches the process gas stream at the

cathode and elemental sulfur vapor that emerges from the anode. Removal efficiencies av. up to 90% at any inlet level; current efficiencies are near 100% at the high inlet concns., decreasing significantly at lower H2S levels as the competing redn. of H2O becomes more favored. Molten carbonate **fuel cell** (MCFC) materials can be used exclusively at the MCFC operating temp. of 650°C, with the low concns. of H2S, including the NiO cathode. At concns. higher than about 60 ppm the operating temp. must be lowered approx. 50°C to avoid melting of the sulfided nickel cathode.

CC 72-3 (Electrochemistry)
Section cross-reference(s): 47

ST electrochem sepn hydrogen sulfide coal gas; reducing gas **stream** electrochem membrane **purifn**

IT Current density
(effect on electrochem. membrane sepn. of H2S from reducing gas streams in electrolytical molten carbonate **fuel cell**)

IT Stream waters
(electrochem. membrane sepn. of H2S from reducing gas streams in electrolytical molten carbonate **fuel cell**)

IT Current efficiency
(for electrochem. membrane sepn. of H2S from reducing gas streams in electrolytical molten carbonate **fuel cell**)

IT Electrolytic cells
(membrane; electrochem. membrane sepn. of H2S from reducing gas streams in electrolytical molten carbonate **fuel cell** with NiO cathode)

IT Separation
(of H2S from reducing gas streams in electrolytical membrane molten carbonate **fuel cell**)

IT Ceramic membranes
(porous, in electrochem. membrane sepn. of H2S from reducing gas streams in electrolytical molten carbonate **fuel cell** with NiO cathode)

IT 7440-02-0, Nickel, uses
(electrochem. membrane sepn. of H2S from reducing gas streams in electrolytical molten carbonate **fuel cell** with Ni electrodes)

IT 1344-28-1, Aluminum oxide, properties
(formation by reaction of Al with processing gas in electrolytical molten carbonate **fuel cell** for electrochem. membrane sepn. of H2S from reducing gas streams)

IT 12003-67-7, Lithium aluminate LiAlO2
(formation by reaction of Al2O3 with LiCO3 for binding membrane structure to housing in electrolytical molten carbonate **fuel cell** for electrochem. membrane sepn. of H2S from reducing gas streams)

IT 1312-73-8, Potassium sulfide 12136-58-2, Lithium sulfide 215455-19-9, Lithium potassium sulfide (Li1.24K0.76S)
(formation in electrochem. membrane sepn. of H2S from reducing gas streams in electrolytical cell with molten carbonate **fuel cell**)

IT 11113-75-0, Nickel sulfide
(formation in electrochem. membrane sepn. of H2S from reducing gas streams in electrolytical molten carbonate **fuel cell** with NiO cathode)

IT 1313-99-1, Nickel oxide, uses
(sepn. of H2S from reducing gas streams in electrolytical molten carbonate **fuel cell** with cathode from)

IT 7429-90-5, Aluminum, uses
(using in fabrication of electrolytical molten carbonate **fuel cell** for electrochem. membrane sepn. of H2S from reducing gas streams)

L27 ANSWER 19 OF 26 HCA COPYRIGHT 2004 ACS on STN

129:177970 Phosphoric acid **fuel cell** power plant having miniaturized water purification system. Kizuka, Noriko (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 10223246 A2 19980821 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-23430 19970206.

AB The title H3PO4 **fuel cell** power plant has a condensing heat exchanger equipped with a condensed water purifn. system and a pipe having valve, which is opened when condensed H3SO4 flows through the pipe connecting to a tank for recovering condensed H3PO4. The condensed water purifn. system consists of a decarbonation tower, a water tank, and a water purifn. app. Purified water is reused in the plant. The tank for codensed H3PO4 prevents condensed H3PO4 from **flowing** into the water **purifn.** app. Therefore miniaturizing of water purifn. app. is achieved.

IC ICM H01M008-04
ICS H01M008-04; H01M008-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 61

ST phosphoric acid **fuel cell** power plant; condensed phosphoric acid tank power plant; water recycling **fuel cell** power plant

IT Water purification
(app.; phosphoric acid **fuel cell** power plant having miniaturized water purifn. system)

IT **Fuel cells**
(power plants; phosphoric acid **fuel cell** power plant having miniaturized water purifn. system)

IT 7664-38-2, Phosphoric acid, processes
(phosphoric acid **fuel cell** power plant having

miniaturized water purifn. system)

L27 ANSWER 20 OF 26 HCA COPYRIGHT 2004 ACS on STN
124:210505 Removal of hydrogen sulfide from anaerobic digester gas by oxidation to elemental sulfur. Spiegel, Ronald J.; Trocciola, John C.; Healy, Herbert C.; Lesieur, Roger R. (International Fuel Cells Corporation, USA). PCT Int. Appl. WO 9601300 A1 19960118, 10 pp. DESIGNATED STATES: W: CA, JP; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1995-US8793 19950623. PRIORITY: US 1994-269518 19940701.

AB The effluent gas stream from anaerobic wastewater treatment digesters is treated to remove trace amts. of hydrogen sulfide and other contaminants. The chem. equation involved relies on the reaction of hydrogen sulfide with oxygen to form water plus elemental sulfur. The removal system includes a variable control line for adding air to the effluent gas **stream**; a **filter** for removing solids, entrained liqs. and bacteria from the oxygen-enriched gas stream; a blower for directing the **filtered** gas **stream** into a potassium promoted activated carbon bed wherein the above chem. reaction takes place; and sensors for measuring the content of oxygen and hydrogen sulfide at the entrance and exist of the activated carbon bed. When the hydrogen sulfide content of the existing gas stream exceeds a predetd. level, the amt. of air added to the gas stream is increased until the predetd. level of hydrogen sulfide is achieved in the existing gas stream. The purified digester gas is suitable for use as a fuel gas for a **fuel cell** or other power plant.

IC ICM C10L003-10
CC 59-4 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 52, 60
IT **Fuel cells**
Fuel gases
(removal of hydrogen sulfide from anaerobic digester gas for prepn. of **fuel cell fuel** gas)

L27 ANSWER 21 OF 26 HCA COPYRIGHT 2004 ACS on STN
124:12292 Landfill-gas treatment system. Spiegel, Ronald J.; Sederquist, Richard A.; Trocciola, John C.; Healy, Herbert C.; Lesieur, Roger R.; Sandelli, Gregory J. (International Fuel Cells, USA). U.S. US 5451249 A 19950919, 7 pp. (English). CODEN: USXXAM. APPLICATION: US 1994-241113 19940614.

AB The gas stream which emanates from landfills is treated to produce a purified gas which is essentially a hydrocarbon such as CH4 which can be used as the fuel source in a **fuel-cell** power plant or in other power plants which use natural gas as a fuel. The landfill gas passes through a system which removes

essentially all of the H2S, H2O, org. S and halogen compds., and solid contaminants from the gas stream. The resultant **purified** gas **stream** can be cleanly flared, used to power an energy plant, or put to other useful purposes.

IC ICM B01D053-04
NCL 095117000
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 60

L27 ANSWER 22 OF 26 HCA COPYRIGHT 2004 ACS on STN
121:183145 Wilsonville Power Systems Development Facility. Sears, Rodney E.; Haq, Zia U.; Vimalchand, V. (Southern Company Services, Inc., Birmingham, AL, USA). Proc. Bienn. Low-Rank Fuels Symp., 17th, 655-63. Energy Environ. Res. Cent.: St. Louis, Mo Grand Forks, ND. (English) 1993. CODEN: 60CYAO.

AB The PSDF (power system development facility) in Wilsonville, Alabama, will consist of five modules for systems and not component testing. These modules include an advanced pressurized fluidized-bed combustion module (APFBC), and advance gasifier module, hot gas Foster Wheeler's technol. for second generation PFBC. This module relies on the partial conversion of the coal to a fuel gas in a carbonizer with the remaining char converted in a PFBC. Both the fuel gas and PFBC exhaust gas **streams** are **filtered** to remove particulates, then combined to a fire a combustion turbine. The advanced gasifier module involves M. W. Kellog's transport technol. for pressurized combustion and gasification to provide either an oxidizing or reducing gas for parametric testing of hot particulate control devices. The compressor/turbine module currently consists of GM-Allison 501 gas turbine, nominally producing 4 MW of elec. power, which will provide a more cost effective compressed air source than an elec. driven compressor train. The **fuel cell** module is integrated with the transport gasifier and can be used to test advanced **fuel cells** such as molten carbonate and solid oxide **fuel cells.**

CC 51-18 (Fossil Fuels, Derivatives, and Related Products)
ST power generation coal plant combined cycle; gasification coal power plant; boiler firing coal char power; **fuel cell** power
IT **Fuel cells**
(in combined cycle power development plant, Wilsonville, Alabama)

L27 ANSWER 23 OF 26 HCA COPYRIGHT 2004 ACS on STN
120:195733 Carbon monoxide removal from hydrogen-rich **fuel cell** feedstreams by selective catalytic oxidation. Burwell, Robert L., Jr. (Northwestern Univ., IL, USA). Chemtracts: Inorganic Chemistry, 5(4), 209-13 (English) 1993. CODEN: CICHED. ISSN: 1051-7227.

AB A review with one ref. on development of catalysts for oxidn. of CO in gas fuel contg. H. Tests with com. catalysts of Pt, Pd, Rh, and Ru on Al2O3 and Co-Cu, Ni-Co-Fe, Ag, Cr-Fe supported on mixed oxides, selectivity and oxidn. mechanism, and research problems are discussed.
CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 67
ST review catalyst oxidn carbon monoxide; **fuel cell** gas purifn review
IT **Fuel cells**
(**purifn.** of hydrogen-rich **stream** for, selective oxidn. of carbon monoxide for, catalysts for)
IT 1333-74-0P, Hydrogen, uses
(fuels, purifn. of, catalytic oxidn. of carbon monoxide for, for **fuel cell**)
IT 630-08-0, Carbon monoxide, miscellaneous
(removal of, from fuel stream for **fuel cell**, selective oxidn. catalyst for)

L27 ANSWER 24 OF 26 HCA COPYRIGHT 2004 ACS on STN
103:73878 Portable **fuel-cell** battery. (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 60054177 A2 19850328 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-160914 19830901.
AB The title battery comprises stack of >1 cell with low **flow** -resistance electrode **filter** and/or active C filter on the oxidizing agent (air) inlet line. At space velocity 15000 and gas flow resistances 2.5, 5.0, and 10.0 mm H2O, the electrode filter showed a resp. filter capacity of 18, 40, and 95 g/m2 vs. 2, 5, and 12 g/m2 for fiber filter. Thus, carbon black contg. 15 wt.% Pt was applied to C paper at 0.9 mg Pt/cm2 and synthetic graphite contg. Pt 20 and Ru 10 wt.% applied to C paper at 3.0 mg Pt/cm2 and 1.5 mg Ru/cm2, to form the cathode and anode (MeOH) catalyst layers, resp. A stack of 20 cells of effective electrode area of .apprx.25 cm2 with ion-exchange membrane impregnated with 3M H2SO4 as electrolyte was placed in a casing with an air blower. Two circular plate electrode with 5-mm layer of 100-mesh C between them were used as filter. After 200-h discharge at 60° and 60 mA/cm2, the voltage dropped from 7.6 to 7.4 V vs. 7.6 to 7.0 V for a similar battery without filter.
IC ICM H01M008-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **fuel cell** battery air filter
IT **Fuel cells**
(methanol-air, stacked, with carbon air filter)
IT 7440-44-0, uses and miscellaneous
(air filter, in methanol-air stacked **fuel cells**)

IT 7440-17-7, uses and miscellaneous
(anodes, platinum-, methanol catalytic, **fuel-cell**)
IT 7440-06-4, uses and miscellaneous
(electrodes, air and methanol catalytic, **fuel-cell**)

L27 ANSWER 25 OF 26 HCA COPYRIGHT 2004 ACS on STN
62:13993 Original Reference No. 62:2525h,2526e-f Hydrogen purification using a modified **fuel cell** process. McEvoy, J. E.; Hess, R. A.; Mills, G. A.; Shalit, Harold (Houdry Process & Chem. Co., Marcus Hook, PA). Industrial & Engineering Chemistry Process Design and Development, 4(1), 1-3 (English) 1965. CODEN: IEPDAW. ISSN: 0196-4305.
AB A new technique for **purifying** H **streams** to obtain high-purity H, an outgrowth of **fuel cell** research, is based on the use of electrochem. cells using highly efficient catalytic electrodes. Impure H is consumed at the anode of the cell and purified H generated at the cathode. By the application of a small potential across the electrodes of this cell, it is possible to ionize H, and only H, at the anode and simultaneously to produce an equiv. amt. of H at the cathode. The impurity gases pass over the anode unreacted and are discharged from the system. Data show the polarization characteristics of the electrodes in the presence of pure H, as well as the effect of gaseous diluents from which the "efficiency" of H removal from the charge stream can be calcd. H2S and CO are electrode poisons, although the effect of CO is transient.
CC 17 (Industrial Inorganic Chemicals)
IT 1333-74-0, Hydrogen
(purification of, by modified **fuel cell** process)

L27 ANSWER 26 OF 26 HCA COPYRIGHT 2004 ACS on STN
61:59506 Original Reference No. 61:10285a-b Iodine sampling with silver nitrate-impregnated filter paper. Ettinger, H. J. (Los Alamos Sci. Lab., Los Alamos, NM). U.S. At. Energy Comm., Volume LADC-5515, 25 pp. From: Nucl. Sci. Abstr. 17(20), Abstr. No. 34151(1963). (Unavailable) 1962.
AB The use of AgNO3-impregnated radio-I filters was evaluated under lab. and field conditions. Preliminary lab. tests indicated radio-I filter efficiencies of 91-96%. When sampling a stack effluent contg. a variety of reactor waste products, radio-I filter efficiencies of <8% were obtained. Sampling effluent gases from hot **cells** where reactor **fuel** elements are handled resulted in a median radio-I filter efficiency of 20% with efficiencies as high as 96-100% under certain operating conditions. AgNO3impregnated radio-I filters do not provide a reliable method

for monitoring the release of I to the atm.
CC 13 (Nuclear Technology)
IT Radioactive substances
(wastes, 181I. removal from off-gas **streams** by AgNO3-impregnated **filter** paper)